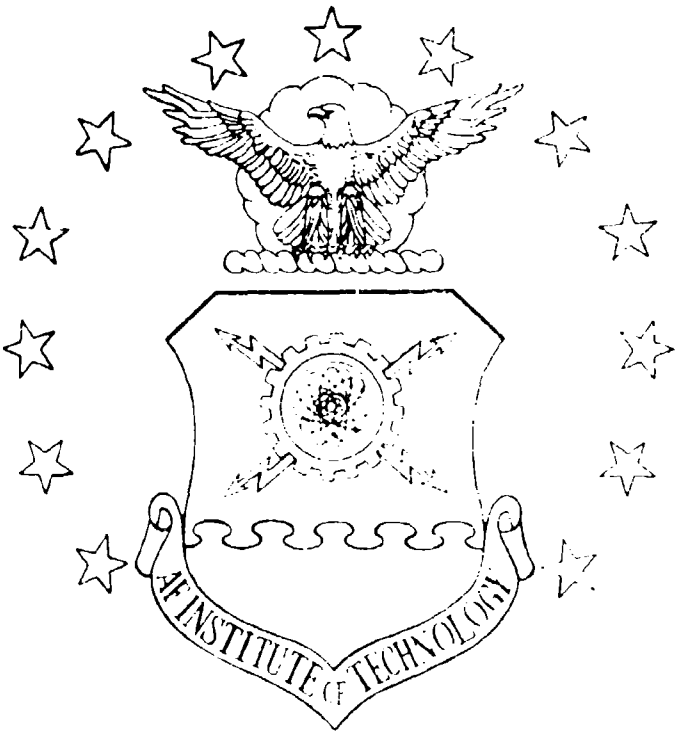

THE RELATIONSHIP BETWEEN SPORTS PARTICIPATION AND MANAGERIAL BEHAVIOR AN EXPLORATORY STUDY

THESIS

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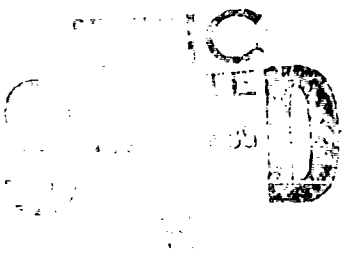

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THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Systems Management

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Preface

The purpose of this study was to develop a model and then test for a relationship between participation in sports and managerial behavior. Two main points stand out as to how the research was conducted. First, test subjects, for testing out the model, were composed of U.S. Air Force program/project managers assigned to Aeronautical Systems Division (ASD), Wright-Patterson AFB.

Second, the study was performed by comparing observed managerial behavior: (1) between program/project managers who have participated in organized sports (both team and individual) and between those who have participated in little or no sports at all; and (2) between those who have participated in different types of sports.

In completion of this thesis, I wish to extend my sincere gratitude and appreciation to those persons who were instrumental in providing ideas, guidance, and inspiration.

I express appreciation to my thesis advisor Captain Thomas Triscari for his inspiring enthusiasm, guidance, and constant encouragement. I thank Dr. John J. Morse of Florida International University for his assistance and permission to use the Evaluating Managerial Performance Survey in this research; Dr. Robert W. Keidel of the University of Pennsylvania, for providing further insight

into his sports models for business; and Lt Col Philip R. Elliott of the Air Force Academy, for the substantial amount of material that he provided me with in support of this study.

To my close friends in Section 6 and the Wright-Patterson community, my thanks for all the suggestions, "good leads", and "tension relieving" times that they provided me with throughout the whole thesis experience.

I wish also to thank my family for the encouragement, love, and cheer during the joy and crisis that life brings.

Finally, a very special thanks to Susan who provided me with more to go on during my AFIT studies than she will ever realize.

-- Donald E. Walters

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Abstract

This research examined the popular, but empirically untested, notion that participation in organized sports has a positive relationship to management development. Exploration of this hypothesised relationship was performed within the context of U.S. Air Force program/project managers assigned to Aeronautical Systems Division (ASD), Wright-Patterson AFB. The methodology compared managerial behavior: (1) between program/project managers who have participated in organized sports (both team and individual) and between those who have participated in little or no sports at all; and (2) between those who have participated in different types of team sports. Specifically, this was accomplished by determining mean scores in each of six different managerial roles for 34 ASD program managers. These mean scores represent each manager's overall managerial performance as reported by the manager and up to three additional evaluators professionally related to him/her. Statistically significant differences were found, in mean scores, between those managers who had participated extensively in sports and those who had participated less; between those who had concentrated more on team sports and those who concentrated more on individual sports; between those participating in different types of team sports; and between those identified as having a high degree of athletic prowess and those identified as having lower degrees of

prowess. The total number of years of sports participation and athletic prowess were both found, in separate regression analyses, to be linearly related to the mean scores, for all six roles. The results of this investigation clearly indicated a positive relationship existing between participation in sports and managerial behavior -- within the context of ASD program managers. The strong consistency of these empirical findings suggest that this relationship may be causal.

THE RELATIONSHIP BETWEEN SPORTS PARTICIPATION AND MANAGERIAL BEHAVIOR: AN EXPLORATORY STUDY

I. Introduction

Chapter Overview

This chapter provides a background for the research topic of exploring the relationship between sports participation and managerial behavior. The study examines this relationship within the context of United States Air Force acquisition project officers who are program/project managers (hereafter referred to as program managers) working in systems program offices (SPOs). This chapter presents the general issue of the research, the specific problem statement, background material, and the scope of the effort.

General Issue

Effective managerial performance of U.S. Air Force officers is a constant Air Force concern. This concern is primarily due to the magnitude and the limited availability of Air Force resources managed by its officer corp. Air Force officers are charged with the responsibility and authority to manage programs, systems, and people in excess of nine percent of the annual federal budget (1:188). Because of this, further research into the management and leadership development of Air Force Officers is of vital interest to senior Air Force management.

Specific Problem

Over the years, research has shown that there are several factors which are related to on-the-job behavior exhibited by managers. For this study, on-the-job behavior refers to the manner in which a manager carries out his/her managerial duties on a day to day basis. These related factors include, but are not limited to, such things as education, experience, age, sex, personality, individual values, and the specific situation that the manager is faced with (9:394,403,413-416; 21:59-63). To enhance the leadership development of its officer corps, senior Air Force officials need to be made aware of all possible factors.

This research effort, therefore, is an attempt to examine if participation in sports might be one of these other influencing factors on managerial behavior -- more specifically, on the managerial behavior of Air Force Acquisition Project Officers who are program managers working in systems program offices (SPOs). This will be accomplished by comparing observed managerial behavior: (1) between program managers who have extensively participated in organized sports (both team and individual) and between those who have participated in little or no sports at all; and (2) between those who have participated in different types of sports.

Background

In today's society, it is generally believed that participation in sports has a direct impact on the develop-

ment of both leadership ability and the interpersonal skills of the participants (2:400b; 4:67; 5:8; 7:10-1; 12; 16; 24:66-67; 25; 30). The military promotes sports participation by providing the opportunities and the facilities for a vast array of athletic activities (ie. intramural programs, gymnasiums, swimming pools, tennis courts, areas for running, organized sports programs for dependents, etc.).

The military service academies, institutions set up to develop the values and skills of future military leaders, promote athletics through mandatory sports participation. With few exceptions, all cadets are required to participate (either directly or in support of) in either intramural and/or intercollegiate level sports, as part of the overall leadership training program. The official policy at the United States Air Force Academy (USAFA) is based on the philosophy that, "athletics are significantly related to leadership, and, thus, constitute a major contribution toward the accomplishment of the USAF Academy mission" (25).

On a more general level, in 1981, the Physical Education Public Information (PEPI) project formulated five concepts on physical education for elementary and secondary level school children. Two of those concepts were, "a sound physical education program contributes to development of a positive selfconcept", and "a sound physical education program helps an individual attain social skills" (4:67).

The correlation between sports participation and managerial behavior can also be seen in the numerous

comparisons made between sports and the business industry in general. Lee Iaccoca, in his autobiography, wrote about how he and the legendary professional football coach Vince Lombardi once compared the business world to sports. When asked by Iaccoca what was the formula for his success, Lombardi responded with, "you have to start by teaching the fundamentals. A player's got to know the basics of the game and how to play his position. Next, you've got to keep him in line. That's discipline".

"Finally", he added, "the men have to play as a team, not as a bunch of individuals. There's no room for prima donnas. If you're going to play together as a team, you've got to care for one another. Most people call it team spirit. When players are imbued with that special feeling, you know you've got yourself a winning team" (14:56-57). Iaccoca's position was that this is the type of attitude that successful managers in the business industry take. Korda also alluded to this concept when he wrote, "like sports, the first thing you learn in business is that teamwork is what matters" (19:82-83).

The tendency to compare sports to other types of organized activities is also prevalent in the military. The Duke of Wellington was once quoted as saying, "the Battle of Waterloo was won on the playing fields of Eton" (2:400b). In another example, General of the Army, Douglas MacArthur once stated that, "in all my long service, both in war and in peace, it is in football men that I have found my

greatest reliance" (7:10-1).

These comparisons, however, are all on a general level. Keidel (17:5), in his article, "Baseball, Football, and Basketball: Models For Business," presents a discussion on specific sports compared to specific types of organizations. He suggests that the structure and management of the three major professional sports (baseball, football, and basketball) provide analogies that can serve as guides in analyzing different types of organizations and the people within them. This would imply that participation in specific sports may have an impact on specific managerial behavior as opposed to managerial behavior in general, or in other words, specific managerial behavior may be influenced by participation in a specific sport.

In opposition to this suggested position, the claim can be made that participation in sports has nothing to do with leadership development at all, that the only benefit would be that of a healthier body (which also could be debated). Even if this were the case, Condor, in Ultrasport magazine, suggests that it would still make for a better manager. He stated that, "a healthy individual would be more appealing", and that, "appealing managers could be considered motivating or simply someone to look up to as opposed to one who is overweight or drinks and smokes too much" (6).

Whether sports participation is related to the managerial behavior of Air Force program managers or not remains to be seen. However, research has provided evidence to support

the claim that managers who do (or have) participate(d) in sports are expected to do better on the job than their non-participating counterparts. In a study performed by Robert Half International Associates (RHIA), an executive recruiting firm, it was determined that of 180 executives from 12 different companies making from $30,000 to $50,000, those who listed sports participation on their resumes made an additional $3,120 (on the average) per year more than those who did not. The reason given was that the employers felt that those who had played sports had more potential (5:8).

In a telephone interview with Marc Silbert, president, Robert Half New York, a division of RHIA, he stated that, "although their is reason to believe that it will, sports participation may not directly help a manager on his job". "However", he added, "it certainly won't hurt him" (31).

Scope

This research project was limited to the study of the relationship between sports participation and managerial behavior of Air Force program managers working in SPOs. The population of program managers provided an ample and very suitable data base for this particular study. Primarily due to the accessibility of the subjects and the researchers personal experiences in this career field. This experience resulted in a clear understanding of the nature of the organization that program managers operate in and the type of managerial behavior required of a successful program

manager.

In the context of this study, Air Force SPOs are organized as matrix organizations; and due to the nature of this type of organization, program managers within the Air Force are required to manage programs and people under very uncertain and chaotic conditions, with little or no authority over other program team-members. According to Youker, "to be a successful organization, the SPO requires careful definition of authority and responsibility as well as strenuous efforts toward coordination, teamwork and diplomacy" (35:132).

This implies that the program manager is a major factor in determining the success of that organization. Therefore, the successful program manager, besides being technically competent, must also be a team player with the necessary managerial (specifically interpersonal) skills to motivate others to achieve organizational objectives. The scope of this study, therefore, was limited to the examination of the relationship between sports participation and the "necessary managerial skills" required of successful program managers.

Chapter Summary

This chapter has introduced the focus of this research effort. The general intent is to determine if there are any significant differences in on-the-job (managerial) behavior: (1) between those Air Force program managers who have extensively participated in sports (both team and individual) and those who have participated in little or no sports

at all; and (2) utilizing Keidel's sports/organizational structure model, among those who have participated in different types of sports. Also included in this chapter are the general issues, related background material, and the scope of the research effort. Chapter II presents a review of literature relevant to the concepts and ideas used in this study, and concludes with a formal statement of the four major research hypotheses proposed in this effort. Chapter III provides the research methodology used in evaluating the various hypotheses, while Chapter IV provides the results of the analytical work. Finally, Chapter V summarizes the findings of the study with conclusions and offers recommendations for future research.

II. Literature Review and Research Hypotheses

Chapter Overview

This chapter provides background information on three areas relevant to this study. The first area deals with the concepts of leadership and managerial behavior, how they are related, and the type of managerial behavior required for successful management within a matrix organization. The second area reviews literature which conceptualizes athletic activities in terms of organizational theory. The final area covers previous studies relating managerial/leadership development/performance to sports participation. Following this review of literature, the formulation of the research hypotheses to be investigated in this study and the actual hypotheses themselves are presented.

Leadership and Managerial Behavior

To understand the nature of management and leadership, it is first important to know that managers and leaders are not synonymous concepts.

Leadership. The difference between leadership and management is stated as follows:

> Leadership is a part of management but not all of it...Leadership is the ability to persuade others to seek defined objectives enthusiastically. It is the human factor which binds a group together and motivates it toward goals. Management activities such as planning, organizing, and decision-making are dormant cocoons until the leader triggers the power of motivation in people and guides them toward goals [9:389].

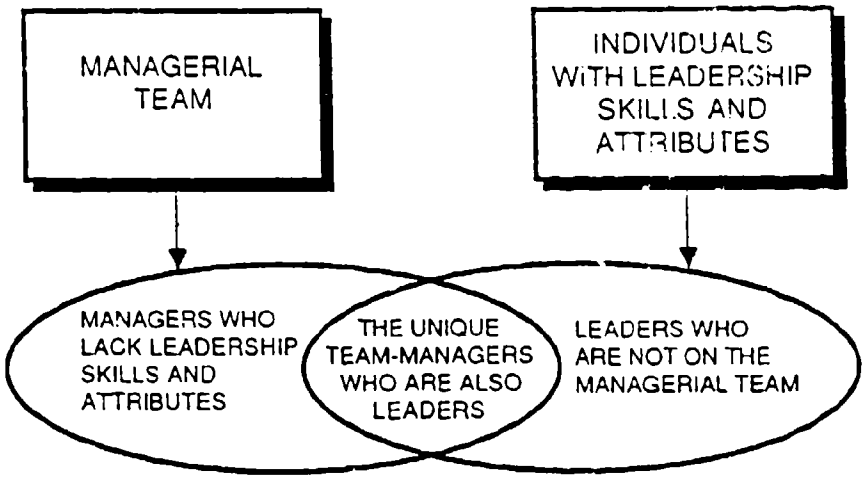

Fig. 1. The Preferred Leader/Manager Mix (Adapted from J. Donnelly and others, Fundamentals of Management)

Hellriegel and Slocum defined leadership as "the process of influencing group activities toward the achievement of goals" (13:463). Leaders, therefore, are found not only in the managerial hierarchy, but also in informal work groups. In the same sense, there exist managers who lack the leadership skills and attributes to successfully lead other people.

Figure 1 emphasizes graphically, the relationship between management and leadership. It implies that the preferred managers are those that possess the necessary leadership skills and qualities which would make them more effective and efficient at their job.

An important feature of the above definitions of leadership is that it is a process whereby one individual exerts influence over others. Several attempts have been made to clarify and depict the basis upon which a manager might influence a subordinate or a group of subordinates.

One of the most concise and insightful approaches is offered by French and Raven (9:389-391). They define influence in terms of power or the control a person possesses and can exercise on others. French and Raven (9:389-391) proposed five different bases of power:

1. Coercive power -- This is power based on fear; more specifically, upon the expectations of individuals that punishment is the consequence for not agreeing with the actions, attitudes, or directives of a superior.

2. Reward power -- This is the opposite of coercive power. A subordinate perceives that compliance with the wishes of a superior will lead to positive rewards.

3. Legitimate power -- This type of power comes from the position that the manager holds in the organization, the more senior, the more power.

4. Expert power -- This is power characterized by having expertise, special skill, or knowledge. The possession of one or more of these attributes gains the respect and compliance of peers, superiors, and subordinates.

5. Referent power -- This power is based on a follower's identification with a leader. The leader is admired because of one or more personal traits, and the follower can be influenced because of this admiration.

Coercive, reward, and legitimate power are specified primarily by the individual's position in the organization; whereas, the degree and scope of a manager's referent and expert power bases are dictated primarily by individual

characteristics. Some managers possess specific qualities (ie, skills or attributes) that make them attractive to subordinates. For example, managers could be considered attractive because of an ability to express themselves clearly or because they appear completely confident in performing the job. In summary, the individual leader controls the referent and expert power bases, while the organization controls the coercive, reward, and legitimate power bases (9:389-391).

Research has shown that the methods by which leaders utilize their power bases (individual leadership style) is a key factor in determining managerial performance. Therefore, managerial success is dependent upon the style of leadership employed (33:32). However, a particular style of leadership to be used to achieve success is a misconception. Hersey and Blanchard wrote that:

> Over the last few decades, people in the field of management have been involved in a search for a "best" style of leadership. Yet, the evidence from research clearly indicates that there is no single all-purpose leadership style. Successful leaders are those who can adapt their behavior to meet the demands of their own unique situation [27:1].

There are several of these leadership style models in existence today. The majority of them are in either the form of a continuum of leadership behavior like Tannenbaum and Schmidt's model or, in the form of a two-dimensional grid like Blake and Mouton's Managerial Grid and Hersey and Blanchard's Situational Leadership Model. The continuum goes from an autocratic (authoritative) extreme to a

democratic (participative) style of leadership at the other end. The grid, on the other hand, is two-dimensional and recognizes behavior that is either task oriented, relationship oriented or a combination of the two thereby dispelling the either/or styles of leadership shown in the continuum (9:397-403; 27:1).

Measuring the performance of managers using a leadership style approach is limiting in that other aspects of the manager's jobs are not accounted for. This is because leadership was shown to be only one many elements of management (see Figure 1). Examining the job for more than just its leadership aspect is required for a true indication of performance.

Managerial Behavior. According to Szilagyi (33:27), a manager's job can be studied from at least three different perspectives. These perspectives are managerial functions, managerial skills and managerial roles. The first two basically serve as the foundation of what managers do and the skills that they use to do their job. "To manage", Szilagyi wrote, "involves a systematic way of doing things consisting of a set of managerial functions -- planning, organizing, leading, and controlling; and successful achievement as a manager is dependent on acquiring a set of crucial management skills -- technical, human, conceptual, and diagnostic" (33:27).

The third perspective on the manager's job is the set of behaviors, or roles, that are required, utilizing the

acquired skills, to perform the managerial functions. The concept of a role, Szilagyi suggests, is drawn from the behavioral sciences and is defined as, "an organized set of observable behaviors that are attributed to a specific office or position". Therefore, the role for a manager is the capacity in which he or she acts. For example, a manager may act as a leader of subordinates, a spokesperson of the organization, source of information, or one who makes decisions. Simply put, successful managers must constantly adapt to changes, react to crises, and be able to "play different roles" while performing their jobs (33:29). This concept is what relates managerial behavior to management/leadership style.

According to Morse, management/leadership style is preferred behavior, the way that a manager would like to behave given a choice; whereas, managerial behavior suggests the ability to go back and forth between different styles depending on the need. "Effective managers", he stated, "are able to change or modify their behavior or style to fit the situation" (23). This further supports the position that leadership is but one of several functions that a manager performs.

In a detailed study of managerial activities, according to Szilagyi (33:27-29) and Donnelly, Gibson, and Ivancevich (9:29-32), Mintzberg identified a series of roles relating to interpersonal, informational, and decisional activities. Mintzberg argued that all managers have formal authority and

status given to them by the organization (This is synonymous to what French and Raven determined in their research on power bases). Authority and status, he suggested, give rise to interpersonal relations with subordinates, peers, and superiors, who in turn provide managers with information to make decisions.

Three interpersonal roles, which focus on interpersonal relationships, characterize managerial activities. The roles of figurehead, leader, and liaison are a direct result of the manager's formal authority; and by assuming these roles, the manager is able to move into the informational roles which, in turn, lead directly to the decisional roles.

The roles of monitor, disseminator, and spokesperson make up the informational roles; whereas, the decisional roles are characterized by the roles of entrepreneur, disturbance handler, resource allocator, and negotiator. A detailed discussion of all 10 managerial roles is presented in Figure 2.

Managerial Implications. Utilizing Mintzberg's model, it can be shown that the interpersonal roles (of which leadership is included) are key factors in determining the performance of a manager. Additionally, how the manager behaves, while functioning in these roles, is primarily a function of his/her interpersonal skills. The readings suggest that the more developed the interpersonal skills, the more effective the manager should be (9:27-29; 33:24-26; 34:71). This relationship then suggest that the

Role	Description	Examples
Interpersonal Roles		
Figurehead	Symbolic head; performs routine duties of a legal or social nature.	Greeting visitors; signing legal documents (university president signing diplomas); usually at executive manager level.
Leader	Responsible for motivation of subordinates and for staffing and training.	Most activities involving subordinates: formal authority position.
Liaison	Maintains network of outside contacts to obtain favors and information.	"Keeping in touch" with the external community through phone calls, meetings, etc.
Informational Roles		
Monitor	Seeks and receives information to obtain thorough understanding of organization and environment.	Reading periodicals and reports, conversations, and other activities related to changes in consumer activities, competitors' plans, etc.; "keeping one's ear to the ground."
Disseminator	Transmits information received from outsiders or insiders to other organization members.	Formal reports, memos, or phone calls to other company managers regarding activities in the business or local community.
Spokesperson	Transmits information to outsiders on organization plans, policies, actions.	Conversations with suppliers, customers, speeches to local groups.
Decisional Roles		
Entrepreneur	Initiates and supervises design of organizational improvement projects as opportunities arise.	Realigning subordinates' jobs and responsibilities; new product or promotional ideas.
Disturbance handler	Responsible for corrective action when organization faces unexpected crises.	Resolving employee conflicts; adjusting to strikes at suppliers; reacting to a bankrupt customer.
Resource allocator	Responsible for allocation of human, monetary, and material resources.	Scheduling time for projects; awarding bonuses and pay raises.
Negotiator	Responsible for representing the organization in bargaining and negotiations.	Negotiating shipping rates and schedules with transportation companies; labor-management contracts.

Adapted from H. Mintzberg, The Nature of Managerial Work (New York: Harper & Row, 1973)

Fig. 2. Description and Examples of Mintzberg's 10 Managerial Behavior Roles (Reprinted from D. Szilagyi, Managerial and Performance)

interpersonal skills that the manager possess are also key factors in determining his/her managerial performance. Szilagyi wrote, "how the individual performs the managerial functions depends both on the manager's skills and what behavioral role he or she has taken on" (33:32).

Therefore, measuring the performance of managers, by evaluating their behavior while carrying out the different managerial roles, should then provide some insight into the degree of their interpersonal skills.

As a result of the work performed by Mintzberg and other related efforts, Morse and Wagner developed an instrument to measure and evaluate managerial behavior. This instrument, which has been previously validated and in use since 1976, consists of a set of six managerial roles. These six roles are an evolution of the 10 identified by Mintzberg. The final number and description of the roles was a result of a factor analysis process that Morse and Wagner performed on the initial version of the instrument. The resulting six roles are: (1) Managing the Organization's Environment and Its Resources, (2) Organizing and Coordinating, (3) Information Handling, (4) Providing for Growth and Development, (5) Motivation and Conflict Handling, and (6) Strategic Problem-Solving (22:23-25). A description of effective managerial behavior required for each of these roles is provided in Figure 3.

Research has shown that the development of the necessary skills, the ability and willingness to take on

ROLE 1: MANAGING THE ORGANIZATION'S ENVIRONMENT AND ITS RESOURCES

Responsible for managing the organization's environment and outside settings through the allocation of scarce organizational resources.

ROLE 2: ORGANIZING AND COORDINATING

Responsible for organizing the separate and distinct tasks within their organizational unit and coordinating those diverse tasks through appropriate collaboration and cooperation toward the accomplishment of overall organizational goals.

ROLE 3: INFORMATION HANDLING

Responsible for the information and communication flows both within his/her organizational unit and between the unit and its external environment.

ROLE 4: PROVIDING FOR GROWTH AND DEVELOPMENT

Responsible for providing for their own personal growth and development and the personal growth and development of associates.

ROLE 5: MOTIVATION AND CONFLICT HANDLING

Responsible for effective motivating of organizational members toward the accomplishment of organizational goals and handling disturbances and conflicts that may be detrimental to the energizing and motivating of associates.

ROLE 6: STRATEGIC PROBLEM-SOLVING

Responsible for the effectiveness of their own decision making and problem solving processes and insuring that associates are effectively utilizing their own problem solving skills.

Fig. 3. Description of Morse and Wagner's Six Managerial Behavior Roles (Adapted from J. Morse and F. Wagner, "Measuring the Process of Managerial Effectiveness")

different roles, and the effectiveness of both are determined by such things as education, experience, age, sex, personality, physical traits, superior and peer expectations, and the specific situation that the manager is faced with (9:394, 403,413-416; 21:56-63). Once again, sports participation is also believed to be a factor (2:400b; 4:67; 5:8; 7:10-1; 12; 16; 24:66-67; 25; 30).

A major factor on the situation that managers are faced with is determined by the type of organization that they work in. For Air Force acquisition project officers working in SPOs, the organizational structure is usually the matrix.

Managerial Behavior Within the Matrix. Greiner and Schein wrote that in today's uncertain environment, growing in practice, throughout industry and the public sector, is the use of more "organic" organization structures to cope with rapidly changing technologies, unique customer requirements, and the need for multidisciplinary teams to solve complex problems. They further stated that, "these organizations tend to adapt a matrix structure to manage a variety of projects, where specialists are assigned to different functional pools but spend their working time in one or more interdisciplinary teams led by project leaders" (11:17).

As was previously discussed, a managers ability to gain support from others depends on his or her managerial style; and by definition, managerial/leadership style is composed of certain bases of influence such as legitimate, reward, coercive, expert and referent (34:70). Several authors have

written about the nature of the project manager's use of power. "In project (matrix) management", wrote Thamhain and Wilemon, "the study of managerial style is especially important because many of the traditional influence bases, such as direct reward and punishment, are in the hands of functional colleagues" (34:70). This is consistent with that of Knight, who stated, "A very common figure in the literature on matrix organizations is the project manager who has full responsibility for project results, but no authority over project staff" (18:184). Finally, H. Perham further emphasized this position when he wrote:

> He [the project manager] must get all these diverse types to work together smoothly as a team and see to it that the job gets done on time, with quality up to specifications and within predetermined costs. Yet he normally has no official authority over these men whose co-operation is essential to his success [28:32].

Knight claims that the definition of roles in the matrix is very ambiguous in that individual job responsibilities are very vague and unclear. Because of this and the fact that the project manager is lacking in formal authority, several factors must be specially considered in selecting project managers. These factors include:

1. Personality, including such qualities as tolerance of ambiguity, persuasive power and personal charisma.
2. Prior personal relationships and contacts in the organization which can help him to get co-operation.

3. Technical expertise and competence commanding wide respect among colleagues (18:184).

These factors are essentially the components that make up the power bases (referent and expert) which are controlled by the project manager. The emphasis in project (matrix) management therefore, is placed on these sources of power as opposed to those controlled by the organization (legitimate, reward and coercive). As was previously stated, the referent source of power is a direct result of individual characteristics such as interpersonal skills (9:389-391). Therefore, this relationship implies that participation in sports should have an influence on the development of the qualities to be considered in selecting program managers.

In a study on leadership, conflict, and program management effectiveness, performed on a sample of 100 project managers, Thamhain and Wilemon found:

> "the less a project manager emphasizes organizationally derived influence bases -- such as authority, salary, and penalty -- and the more he relies on work challenge and expertise, the higher he is rated in his ability to effectively resolve conflict and manage projects [34:85].

Work challenge was described as the process of integrating the personal goals and needs of project personnel with project goals. The study suggested that attempts to enrich the assignments of project personnel in such a way as to be professionally challenging may have a beneficial effect on project performance (34:85).

From a managerial behavior perspective, Morse and

Wagner suggested:

> that managers in industries and organizations coping with rapidly changing, uncertain, external environments and markets would pay special attention to "controlling the organization's environment and its resources" and "information handling," while managers in stable, certain environments and markets would be somewhat less concerned with that behavior and concerned with "strategic problem solving" behavior [22:34].

They also determined that, "the more the managerial position requires working through and with people in the organization, the more a manager in that position might have to attend to "motivating and conflict handling" activities", regardless of the type of organization (22:34).

This implies that motivating and conflict handling, information handling, and controlling the organization's environment and its resources are the roles that most require a high degree of interpersonal skills. If the position that participation in sports influences the development of interpersonal skills is valid, the more a program manager has participated in an "interpersonal skills developing" sport, the more effective he should be at "motivating and conflict handling", "information handling", and "controlling the organization's environment and its resources" activities.

The emphasis placed on the expert and referent derived behavior and skills of program managers is directly related to Keidel's concept of sports as models for organizations. This relationship is the topic of the next section of this review of literature.

Sports as Models for Organizations

As previously stated, Keidel suggest that the structure and management of the three major professional sports (baseball, football, and basketball) provide analogies that can serve as guides in analyzing organizations and the people within them (17:5).

Business's identification with sports, sports teams, and sports personalities is pervasive. This is emboided in Keidel's Sports Illustrated example, "which touts its 'speakers bureau' of 2,000 sports stars 'ready to sparkle at sales meetings, award dinners, conventions, store openings, or wherever else the color and excitement of sports can help you shine.'" (17:5).

Within the business community, he suggest, are constantly heard: such general terms as, "team spirit", "competitiveness", and "winning"; more sport-specific metaphors like "home run hitter", "quarterback", or "point guard"; and statements such as "I've had it with singles hitters; I need someone who can turn it around with one swing" (17:5-6).

Professional team sports are a fertile laboratory for managers, he adds, because they mirror business. "Despite obvious differences -- for example, few businesses operate within such narrow parameters as those governing sports teams -- the parallels are striking" (17:12). At a very basic level they both concern (1) the need to compete externally, (2) the need to cooperate internally, (3) the

need to manage human resources strategically, and (4) generic structure (17:12). Browne and Mahoney also supported this concept when they wrote:

> one advantage of studying the sport team, as opposed to other small groups, is that its structure, its organizational hierarchy, and its roles are clearly defined by the rules of the sport. There is a designated authority, the coach, and peer leaders emerge [3:616].

When asked by Joseph P. Kahn of Inc. Magazine, what the three basic models of organization represented by these sports are, Keidel responded with, "my argument at its simplest is that football represents control and baseball represents autonomy, while basketball represents voluntary cooperation [15:36].

"Each model" he stated:

> is grounded in a particular kind of internal "interdependence." This idea has to do with how parts (or members) of an organization interact. In pooled interdependence, there is little or no interaction; the parts act more or less independently of each other. In sequential interdependence, the parts interact in series: A feeds B, which in turn feeds C, and so on. In reciprocal interdependence, each part interacts with every other. The flow is back-and-forth [17:7].

Each sport contains examples of every form of interdependence. The difference between each of the models is due to the degree of task-based interaction among unit members. The degree of this interaction is low for the pooled relationship, moderate for sequential, and high for reciprocal (17:7,13).

The Baseball Model. Of the three sports, professional baseball exhibits the greatest degree of pooled interdepend-

ence. A summary of what Keidel considered the characteristics of the sport are as follows. Team-member contributions are relatively independent of each other. Rarely are more than a few of the players on the field involved directly in a given play. The geographical dispersion of the players are the least dense of the three sports. The basic unit is the team; and finally, overall performance approximates the sum of team members' performances (17:7-8). Other examples of team sports exhibiting this type of interdependence are softball, track, swimming, and bowling.

As a model for business, baseball-like organizations are loosely fitted and include such groups as the classic sales organization, made up of high performing soloists, and aggregations of basic researchers in which each individual independently pursues his or her own line of inquiry. On a larger scale, organizations with dispersed, quasi-autonomous units (geographically organized firms, holding companies and franchise-based operations) also have much in common with a baseball team. The whole is roughly the sum of its parts (17:13).

Keidel (17:14) suggests that organizations that resemble a baseball team should probably concentrate on technical and individual criteria in assessing prospective or evaluating current employees. Therefore, the successful manager in this type of organization should probably place more emphasis on the "providing for growth and development" role. Morse and Wagner (22:28) suggested that the effective

managers, operating in this role, provide for their own personal growth and development and the personal growth and development of associates.

The Football Model. A high degree of sequential interdependence is exhibited in professional football. The characteristics of this sport are as follows. The dispersion of the players is denser than in baseball. All players on the field are involved in every play, football is "tightly coupled". There is a continuous element of contingency as to who controls the ball. Offense and defense can turn into each other at any time as a result of a turnover (fumble or interception), although normal transitions are frequently played by specialists, members of "special teams". The basic unit are large groups (offense, defense, and special teams) and, to a lesser degree, the small group (linemen, linebackers, backfield, etc). Finally, overall performance is basically the sum of the groups' performances (17:8-9).

Organizations falling within the football model tend to have "long-linked" technologies -- their production processes involve a complex of discrete steps, tightly coupled in serial (and sometimes parallel) order. The most obvious example is the mass production assembly line. On a smaller scale, two different types of football-like organizations can be identified: (1) the vertically integrated firm and (2) the large construction (power plants, ships, high-rise buildings, etc) firm. In all cases, effective performance

depends on the ability to orchestrate a complicated but predictable set of activities in careful sequence (17:13-14).

According to Steel (32), a mass production type organization is usually found in a stable or mechanistic environment. Therefore, based on Morse and Wagner's observations (22:34), managers in football type organizations should be most concerned with "strategic problem solving" behavior.

The Basketball Model. Professional basketball exhibits a high degree of reciprocal interdependence, as demonstrated by the back-and-forth flow of the ball among players. It's characteristics are as follows. The dispersion of players is the most dense of the three sports. Players are (tightly) coupled to all of their teammates in a fluid, unfolding manner. Where offense and defense are "linked" in football, they are overlapping or "intersecting" in basketball. The transition game, unlike football, is continuous, part of the flow. The basic unit is the team. Team performance therefore is a function of player interaction, where each player may be involved with every other player on the court (17:9). Examples of other sports falling into this category are volleyball, hockey, rugby, and water polo.

The basketball model can easily be equated to a matrix organization through its spontaneous interactions, mutual adjustments and voluntary cooperation of players. Keidel elaborates on this with, "Organizations of this sort are

tightly coupled but less than tightly hierarchical. They depend more on member interaction than on managerial direction" (17:14). An analogue within more conventional organizations, he suggest, is the ad hoc task force that cuts across levels and functions, and in which all members interact with each other in virtually all aspects of problem solving activity. They are self organizing and highly flexible he adds. (17:14).

To further emphasize his position, Keidel stated, in his interview with Inc.,

> The easiest way to see what basketball is, organizationally, is to contrast it to the classic football type bureaucracy. In that kind of operation, research and development designs a product, passes it along to manufacturing to make, which then passes it along to marketing to sell. None of the divisions care too much about the others. The analog is the platoon system in football. According to a lot of ex-football players I know, the primary identification on a football team occurs within the platoon unit. Players identify with offense, defense, or special teams more than they do with being a Steeler or Eagle. And that's a necessary thing. You let the offense and defense beat the crap out of each other in practice during the week so they'll be ready for Sunday's game.
>
> With basketball, in contrast, you get much more interdisciplinary cooperation, more lateral versus hierarchical flow. Players switch from offense to defense instantaneously. They all have to be passers and scorers, they all have to play D. Teams practice a few set plays, but what happens on the court is entirely dictated by the flow of the game [15:42].

In summary, Keidel suggests that, organizations that resemble a basketball team (which can be equated to the type of environment that program managers operate in) must pay special attention to interpersonal skills as well as

technical criteria (17:14). This concept is basically the same as those identified by Knight, Morse and Wagner, and Thamhain and Wilemon in the previous section, which placed the most emphasis on the "motivating and conflict handling", "information handling", and "controlling the organization's environment and its resources" roles.

Previous Studies Relating Sports Participation to Managerial/Leadership Performance

Aside from the general belief that participation in sports has an impact on leadership development, there is documented evidence that suggest that it may indeed be more that just a notion.

Studies on U.S. Air Force Academy Cadets. Over the years, several studies have been performed on graduates of the U.S. Air Force Academy (USAFA) in this area. Three such studies are as follows.

Keating compared the cadet physical education and athletic performance of two groups of Academy graduates -- those high in officer effectiveness and those low in officer effectiveness. From each of three USAFA graduation classes (1959, 1960, and 1961), the ten officers with the highest rating in officer effectiveness were compared with the ten officers with the lowest rating in terms of their performance as cadets in physical education and athletics. Overall physical education performance was determined on the basis of the grades received in the sixteen, or more, physical education courses taken by each cadet during their four

years at the Academy. A letter awarded in a varsity inter-collegiate athletic contest constituted athletic participation.

For physical education, he found that the top officer effectiveness group had a higher mean physical education score than the bottom group. The difference, however, was not significant. For the athletes, he found that the top officer effectiveness group had a greater number of athletes than the bottom group. This difference was significant beyond the .10 level of confidence and approached significance at the .05 level (16).

Richarz identified a relationship between the performance of USAFA cadets in the Basic Physical Conditioning Program (BPCP) and to their first-year leadership performance. The study was performed on the total cadet class of 1968. The performance measures used for the BPCP were the two Physical Fitness Test scores achieved in the program, administered in the fourth and seventh weeks of the Basic Cadet Training program. For leadership performances, the cadet standing in the leadership order-of-merit (rank) was used as the measure.

He found that there was a positive statistically significant relationship between the physical fitness scores achieved in the BPCP and first-year performance (30).

Harger and Thomas compared the Leadership Composite scores of athletes and non-athletes. Using members from the class of 1977 as the population and recruited cadets as the

definition for athletes, they found that the Leadership Composite scores for the athletes were significantly higher than the nonathletes at the .01 level of confidence (12).

Other Studies. Several studies have been performed which have identified differences in personalities between athletes and non-athletes, as well as differences between athletes in different sports. Because personality has been shown to be a factor in managerial behavior this implies that sports participation may have, if not direct, an indirect impact on leadership development.

Browne and Mahoney found that, "some of the dimensions on which athletes differed from their nonathletic counterparts included: somatotype, sensation-seeking/extraversion, and augmenting-reducing perceptual styles" (3:610). They also found that there was a trend for athletes from different sport groups to differ from those in other sport groups, though the differences were not as great as the athlete-non-athlete difference (3:610).

In a similar study, conducted at a major Southwest Conference University, Nation and Leunes found differences between the psychological profiles of the players on the varsity football team and between non-athletes of the same age. Specifically, they found that, "in sharp contrast with the stereotype, they (the football players) showed considerably less anger and hostility than the other students, as well as less depression, confusion, and fatigue" (24:66). Tension was about the same and they also showed a great deal

more vigor and much less total mood disturbance (24:66). Between the players themselves, the biggest difference found was that linebackers scored higher in depression, anger, fatigue, and confusion than players at any other position (24:67).

In opposition to the position that participation in sports is an influencing factor on leadership development, Ogilvie and Tutko wrote:

> On the evidence gathered in this study, we can make some broad-range value judgments. We found no empirical support for the tradition that sport builds character. Indeed, there is evidence that athletic competition limits growth in some areas. It seems that the personality of the ideal athlete is not the result of any molding process, but comes out of the ruthless selection process that occurs at all levels of sport [26:61].

The researchers suggest that athletic competition has no more beneficial effects than intense endeavor in any other field, that the only reason for success in sports or in anything else is because the individual already had what was required of him to succeed (26:61). Although the results of this study are inconsistent with what has previously been identified, the research still required acknowledgement.

The studies presented in this chapter by no means capture the totality of the work performed in these areas. These studies represent a small, but representative sample of what has previously been identified in other research efforts.

Hypotheses Formulation

From the literature that has been reviewed, it can be

seen that successful managers, in practically all types of organizations, must be flexible in carrying out their managerial duties (this implies flexibility in management style and the ability to move in and out of different managerial roles). Research has shown that there is no single all-purpose style or behavior. Successful managers are those who can adapt their behavior to meet the demands of their own unique situation (27:1).

The unique situations that program managers are faced with in the SPO (matrix management) environment is one of constant conflict, vagueness, and ambiguity (18:184; 34:71). Therefore, successful matrix management requires a type of management behavior that will resolve conflict and cope within a vague and unclear environment (34:71). This type of management behavior is one that requires a high degree of interpersonal skills (22:34).

In today's society, it is generally believed that participation in sports (in general) has a direct impact on the development of these interpersonal skills (2:400b; 4:67; 5:8; 7:10-1; 12; 16; 24:66-67; 25; 30). However, through Keidel's sports model, it was shown how different types of sports (specifically) can be seen as training grounds for similarly structured organizations (17:5-18). This would suggest that the degree of "interpersonal skill" training should be a function of the specific types of sports that the participant was/is associated with.

Those team sports with a high degree of reciprocal

interdependence (basketball, hockey, volleyball, etc) were shown to resemble the matrix management organizational structure. Therefore, participation in these types of sports should produce the highest degree of task-based interaction among unit members, which in turn should lead to the highest degree of "interpersonal skill" training. The degree of reciprocal interdependence decreases as one goes through the remaining types of sports.

Those team sports with a high degree of sequential interdependence (football, etc) are next, followed by those with a high degree of pooled interdependence (baseball, track, bowling, etc), and finally, individual sports in general (17:13). This relationship would suggest that the degree of "interpersonal skill" training should also decrease as one goes through these four different types of sports.

This model, as presented thus, far is one-dimensional in that it addresses only the particular type and amount of sports participation. To provide further insight into the relationship between sports participation and managerial behavior, a second dimension was added. This dimension, athletic prowess is addressed by hypothesis number four. The rational for this is that the better one gets at a particular sport the more he/she should understand the dynamics of that sport, the overall "team work" concept, and what it takes to be successful in that sport. In

theory, this understanding should carry over into the management arena.

Research Hypotheses

Based on the objectives of this research effort and the findings identified in the literature review, the following hypotheses are posited:

- H_1: The managerial behavior of program managers who have played sports will be rated significantly higher than the ratings of program managers who have played less or no sports at all.
- H_2: Of those program managers who have played sports, the managerial behavior of those who have concentrated more on team sports will be rated significantly higher than the ratings of those who have concentrated more on individual sports.
- H_3: Of those program managers who have played team sports, the managerial behavior of those who have concentrated more on sports with high degrees of reciprocal interdependence will be rated significantly higher than the ratings of those who have concentrated more on sports with high degrees of pooled interdependence or sequential interdependence.
- H_4: Of those program managers who have played sports, the managerial behavior of those who are identified as having a high degree of athletic prowess will be rated higher than the ratings of those identified as having a lesser degree of athletic prowess.

Chapter Summary

This chapter has provided a background of prior research in the areas of leadership, managerial behavior, and the type of managerial behavior required for successful management within a matrix organization, the conceptualization of athletic activities in terms of organizational theory, and the effects of sports participation on leader-

ship development. Also presented in this chapter were the formulation of the research hypotheses and the hypotheses themselves.

III. Research Methodology

Chapter Overview

This chapter presents the methodology used to evaluate the research hypotheses described in Chapter II. More specifically, it defines the research population and the sample from which the data was collected. It also presents the survey instruments which were used to collect data, the data collection method, and the plan for data analysis.

Population of Interest

The research population of interest is considered to be all United States Air Force program managers in the Air Force Systems Command (AFSC) assigned to Aeronautical Systems Division (ASD). The population is restricted to ASD due to the time constraints associated with administering surveys and receiving timely responses.

Because the population is limited, the selected sample of program managers is a sample of convenience. However, using the same assumptions as those of Lempke and Mann, the results of this study may be applied to a broader population. Their assumptions read:

> ...common policies and regulations in AFSC govern the selection of program managers throughout the command. Additionally, the military members of the population share a variety of common experiences, including professional education, military training, and a multitude of military socializing influences [20:37].

A complete listing of all program managers assigned to

ASD, as of 12 May 1986, was obtained from the ASD personnel offices. From this list, the size and the individuals within the population of interest were identified. The size of the population was 441 individuals.

Selection of Sample

A combination of several sampling techniques were used to obtain the selected sample of program managers. Initially, sampling by convenience was used to obtain a list of 25 supervisors and co-workers of program managers within ASD (10:280). These 25 individuals were shown the listing of program managers obtained from ASD personnel. They were then asked to identify those program managers that they considered to be effective managers and, in a separate group, those managers that they considered to be less effective. From this judgement sampling procedure, a form of purposive sampling, a sample of 75 program managers, representing 21 out of the 29 organizations within ASD, was obtained (10:280). This sampling technique was used to ensure that the sample would contain a sufficient number of both effective and less effective managers and thereby avoid a concentration of extremes. In addition to the 75 officers that were sampled, three additional evaluators per manager were also selected for a total of 300 respondents. The three evaluators were made up of the manager's supervisor and two of his subordinates or program team-members. Selection of the two non-supervisor evaluators was accomplished using two different methods. For the initial 50

program managers, the evaluators were randomly selected b the researcher. For the remaining 25, the evaluators were randomly selected by the managers themselves due to time constraints.

Data Collection Instruments

Two survey instruments were used to collect data in order to evaluate the research hypotheses presented in Chapter II. No current, existing survey was found that could be used to address all of the hypotheses. Therefore, two separate survey instruments were designed. The primary survey, which was completed by the individual managers, is divided into three parts. Part I is a modification to the Evaluating Managerial Performance Survey (EMPS), designed by Morse and Wagner (which was discussed in Chapter II).

The questionnaire measures the managers perception of his/her on-the-job behavior for each of the six previously identified managerial behavioral roles. A description and an operational definition of the effective behavior required in each role is provided in Figure 3. Each role is characterized by a series of statements which relate specific behavior to one of the six specific roles. Roles one and two are composed of 11 and 13 statements respectively. Roles three and four contain seven and eight statements, and roles five and six are made up of seven and five, for a total of 51 statements. Each statement and it's associated role is provided in the sample survey in Appendix A.

Part II was used to obtain demographical information on

the managers sports participation background. This part of the survey asks the manager to answer questions pertaining to sports participation experience that he/she may have. The respondents were asked questions that related to such things as, the specific sports that they may have or are currently participating in, their level of participation, and their athletic ability in these different sports. Finally, Part III is a demographic data sheet used to obtain general information on the managers professional background.

The supplementary survey, which was completed by the additional evaluators, is divided into two parts. Part I is a further modification to the EMPS. The questionnaire measures the evaluators perception of the managers on-the-job behavior. It's structure and content is basically the same as the one completed by the program manager except that the statements are proposed from a different perspective. Each statement and it's associated role is provided in the sample supplementary survey in Appendix B. Part II was used to determine the professional relationship between the manager being evaluated and the evaluator.

The survey asked for anonymous responses from the sampled individuals. They were given a clear choice among mutually exclusive and collectively exhaustive categories, or asked their opinions on subjects familiar to them. If the respondents had any comments, they were requested to write them in the booklet itself. Both surveys are included in Appendix A and Appendix B of this document.

Instrument Validity and Reliability. The 51-statement, six-role EMPS was factor analyzed using a correlation matrix obtained from a sample of 406 managers surveyed by Morse and Wagner. The validity of the instrument was established based on factor interpretation of the six behavioral roles. The internal consistency of the managerial effectiveness scale was partially demonstrated from the intercorrelations of the six factors (roles). Further evidence of reliability resulted from computing a Kuder-Richardson coefficient for the data from the sample used in developing the factor analysis (n = 406). The obtained reliability was .91. Finally, an adequate test-retest coefficient of .78 over a six-week period was obtained from the sample of 29 managers in the headquarters of a large manufacturing firm (22:25-32).

Data Collection Method

The data collection process began once the sample population had been identified and the surveys to be used to collect the data with had been approved. The surveys were explained to and then handcarried or mailed to each of the 75 managers identified in the sample. The managers then passed on the supplementary survey packages to the three individuals who rated them in conjunction with the managers themselves. Sample members were asked to complete the surveys within a specified time and return them by way of the inter-office administrative mail system at Wright-Patterson Air Force Base. Pre-addressed envelopes were

provided to ensure the return mailing process.

Data Analysis Techniques

Analysis of the data provided by the survey respondents was performed using the computer support provided by the Air Force Institute of Technology. The Academic Support Computer (ASC), a Harris 800 system, operating the Statistical Package for the Social Sciences (SPSSx) was used to analyze the data. The analysis of the data included the use of several subprograms of SPSSx. The major subprograms used were COMPUTE (for calculating mean scores), T-TEST (for comparing group means), FREQUENCIES, REGRESSION, CROSSTABS, and CONDESCRIPTIVE.

For the EMPS portion of the two surveys, a nine-point rating scale ranging from +4 (the statement is unqualifiedly representative of the manager's behavior) to -4 (the statement unqualifiedly does not represent the manager's behavior) was used on each of the 51 statements in the six different catagories. Arithmetic means, of the responses were determined for each category (role). The mean responses of each manager was combined with those of the three additional evaluators for overall mean scores for each of the six roles.

This method of measuring the on-the-job behavior of each of the managers is consistent with that of Morse and Wagner (22:23-35). Once overall mean scores were computed for each of the managers, different groupings (depending on their sports participation background) were determined and

group means were then computed and compared to each other to determine which groups of individuals scored higher. The mean scores were also used as the dependent variables in the regression analysis.

Utilizing the demographic data obtained from the surveys, with respect to the two different dimensions of the model identified in Chapter II, the managers were placed into the different groupings identified in the hypotheses. The type of sports played, the number of years of participation, how the manager rated his/her athletic ability in the different sports, level of play, and the frequencies of responses were used to determine the configuration of the groupings. Group means were obtained and simple t-test were performed to compare the differences between means. Those groups with significantly higher mean scores were considered the higher performers. Additionally, regression analysis was also performed on hypotheses one and four.

Chapter Summary

This chapter has provided the research methodology to evaluate the research hypotheses presented in Chapter II. The population and sample were identified. The survey instruments which will be used to collect data with were introduced, and a plan for data analysis was described.

IV. Findings and Analysis

Chapter Overview

This chapter summarizes the empirical results of the comparisons between means, the multiple regression analysis, and the cross-tabulations performed within the methodology guidelines established in the preceding chapter. The survey responses are summarized and the specific analysis techniques for each hypothesis are also presented.

Survey Response

From the selected sample of 75 program managers and the 225 additional individual evaluators, 38 program managers and 70 evaluators returned survey packages. This equates to a return rate of 48.0 percent for the program managers, 31.1 percent for the evaluators and 35.3 percent for all 300 respondents combined. These return rates are considered adequate for this study considering the length and difficulty of the surveys (16 pages and 84 items for the program managers and 12 pages and 52 items for the evaluators), the complexity of the data gathering process, and the method of sampling. The method of sampling provided for a greater cross-section of effective and less effective program managers. Additionally, over 61 percent of the program managers who responded provided written comments.

Two of the program managers' surveys and five of the evaluators' were not included in the analysis because they

either were not fully completed or they were returned unopened. An additional three evaluator surveys were not considered because there were no completed program manager surveys to associate them with. Therefore, 34 individual cases, which included 34 program managers and 62 additional evaluators, were used in the data analysis (each program manager was evaluated by at least one additional rater). In addition, the 62 additional evaluators were composed of 21 supervisors and 41 program team-member.

Analysis

The first three hypotheses presented in Chapter II, which dealt with the type and amount of sports participation (the first dimension of the model), were placed in their particular sequence to provide a "stepping-stone" analysis of the model. In other words, each hypothesis was built on the previous one, and served as a foundation on which to develop the next one. The second dimension of the model, athletic prowess, was addressed by the fourth hypothesis. Therefore, the structure of the remainder of this section is based on the individual hypothesis tested.

T-Test Decision Criteria. The decision criteria used for accepting or rejecting the null hypothesis (H_o), that there are no significant differences between the means of the different groups, was based on an alpha value of .05. This equates to the probability of rejecting H_o, when H_o is true, being less than or equal to 5%. Therefore, whenever

the computed probability value (P-value) for each test was greater than .05 H_o was not rejected. For P-values less than or equal to .05, H_o was rejected and the claim that there is a significant difference between the population means was substantiated.

This decision criteria was also used for the test for homogeneity of variances, which was used to determine if the values of the hypothesized sub-population variances were equal or not. Whenever a determination was made that the variances were not equal, an alternative procedure for comparing the differences of means between the hypothesis proposed in this study was used. Instead of the pooled variance estimator (used when the variances are equal) being used, separate variance estimators (used when the variances are not equal) were used (8:292). SPSSx provided the computed T-value, number of degrees of freedom, and the computed P-value for each T-test using both estimators. The T-test results used for this study, therefore, were determined by the outcome of the test for homogeneity of variances.

The results of the test for homogeneity of variances, for each of the T-test performed in this study, are provided in Appendix D of this document (Tables 18, 19, 20, 21, 22, 23, and 24). For P-values greater than or equal to 0.05, the pooled estimator was used for the respective T-test. Separate variance estimators were computed and used for P-values less than 0.05.

The determination as to whether or not a linear relationship exist, when reviewing the results of the regression analysis also made use of the computed P-value decision criteria. According to Reynolds (29), performing regression analysis involves a certain degree of hypothesis testing. In a regression analysis, H_o is $B_1 = 0$, where B_1 is the regression parameter (coefficient) used to describe the relationship between the independent and dependent variables. If H_o is true there is no linear relationship between the independent and the dependent variables; if H_o is not true, then there is some linear relationship. The degree of that relationship is then determined by the computed R and R^2 values.

Formulation of Sub-Hypotheses. Because the managerial behavior being evaluated consisted of six different managerial roles, there were in effect, six sub-hypotheses tested for each major hypothesis. For the T-test evaluating the differences between group means, each sub-hypothesis represented a specific managerial behavior (based on one of six specific roles) in terms of the comparison that was made. A generic listing of each sub-hypothesis is as follows:

H_{n1} = For "managing the organization's environment and its resources" behavior, program managers in group one will have significantly higher ratings than will those managers in group two.

H_{n2} = For "organizing and coordinating" behavior, program managers in group one will have significantly higher ratings than will those managers in group two.

H_{n3} = For "information handling" behavior, program managers in group one will have significantly higher ratings than will those managers in group two.

H_{n4} = For "providing for growth and development" behavior, program managers in group one will have significantly higher ratings than will those managers in group two.

H_{n5} = For "motivation and conflict handling" behavior, program managers in group one will have significantly higher ratings than will those managers in group two.

H_{n6} = For "strategic problem-solving" behavior, program managers in group one will have significantly higher ratings than will those managers in group two.

where n represents the number associated with each of the four main hypothesis. For the regression analysis, each sub-hypothesis represented a specific managerial behavior as a dependent variable to be regressed against. Each sub-hypothesis is based on its respective behavioral role listed in Figure 4.

Hypothesis One

The first hypothesis addressed in this study states that, the managerial behavior of program managers who have played sports will be rated significantly higher than the ratings of program managers who have played less or no sports at all. The techniques used to evaluate the specific sub-relationships were the subprograms FREQUENCIES, T-TEST, CROSSTABS, and REGRESSION.

Differences Between Group Means. The exploratory nature of this research required that an initial, arbitrary

ROLE 1: MANAGING THE ORGANIZATION'S ENVIRONMENT AND ITS RESOURCES

ROLE 2: ORGANIZING AND COORDINATING

ROLE 3: INFORMATION HANDLING

ROLE 4: PROVIDING FOR GROWTH AND DEVELOPMENT

ROLE 5: MOTIVATION AND CONFLICT HANDLING

ROLE 6: STRATEGIC PROBLEM-SOLVING

Fig. 4. Morse and Wagner's Six Managerial Behavior Roles

determination be made as to what constituted a sufficient amount of sports play to be considered in the first group. For this study, if the program manager had played a single organized sport for at least seven years, two different organized sports for at least five years each, or three different organized sports for at least three years each, he/she was then considered in the first group. Those who did not meet this criteria were placed in group number two, the "less or no sports at all" group.

Group number one consisted of 22 program managers and group number two was made up of the remaining 12 (all 34 managers had some sports experience). The subprogram, T-TEST was then run to compare the differences between the mean scores of the two groups for each of the six managerial behavior roles previously identified in Figure 4. The mean scores for all six roles were higher in the first group than they were in the second. Additionally, for an alpha set at 0.05, all roles, except for role four, were significantly

higher. The differences between the means for each role had a respective P-value of: 0.013, 0.010, 0.003, 0.130, 0.000, and 0.006. The results of this analysis are presented in Table 1.

A second T-test was also performed for this hypothesis. This was done to allow the data to be divided in another way to see if the results were consistent with the first test. The criteria for deciding which individuals would be in which group was determined by the median value of the total number of years each program manager had participated in for up to four different organized sports. If a manager had participated in more than one sport during the same time period, the concurrent number of years were added together. For example, if a manager played basketball for four years at the same time that he was playing tennis, his total number of years of participation for those two sports were eight. Using the FREQUENCIES subprogram command, it was determined that for the 34 managers, the total number of years ranged from one to 28, with a median value of eight. Therefore, using the median value as the criteria for determining the composition of the two groups, those program manager who had nine or more years of total sports play were then considered in the first group. Those who had eight or less years of total sports play were placed in group number two, the "less or no sports at all" group.

Group number one consisted of 17 program managers and group number two was made up of the remaining 17. Test

TABLE 1

RESULTS OF THE FIRST T-TEST
FOR SPORTS PARTICIPATION

GROUP 1 -- HIGH PARTICIPATION
GROUP 2 -- LOW OR NO PARTICIPATION

VARIABLE	NO. OF CASES	MEAN	STD DEV	STD ERR	T VALUE	DEG OF FREE	P VALUE
ROLE 1 *							
GROUP 1	22	2.54	0.57	0.12	2.82	14.73	0.013
GROUP 2	12	1.62	1.04	0.30			
ROLE 2 +							
GROUP 1	22	2.35	0.58	0.12	2.72	32.00	0.010
GROUP 2	12	1.68	0.85	0.25			
ROLE 3 *							
GROUP 1	22	2.35	0.51	0.11	3.51	14.75	0.003
GROUP 2	12	1.33	0.93	0.27			
ROLE 4 +							
GROUP 1	22	1.42	0.99	0.21	1.56	32.00	0.130
GROUP 2	12	0.84	1.09	0.32			
ROLE 5 +							
GROUP 1	22	2.29	0.51	0.11	4.86	32.00	0.000
GROUP 2	12	1.18	0.84	0.24			
ROLE 6 +							
GROUP 1	22	1.76	0.74	0.16	2.93	32.00	0.006
GROUP 2	12	0.98	0.82	0.24			

+ = Calculations based on a pooled variance estimator
* = Calculations based on a separate variance estimator

statistics for each group were then calculated to compare the differences between the mean scores of the two groups for each of the six managerial behavior roles (see Table 2). The mean scores for all six roles were higher in the first group than they were in the second. Additionally, for an alpha set at 0.05, all roles, except for role four, were significantly higher. The differences between the means for each role had a respective P-value of: 0.005, 0.006, 0.000, 0.0267, 0.000, and 0.001.

Regression Analysis. The second technique used to evaluate this hypothesis was regression analysis. The total number of years of sports play, computed for the second T-test, was used as the independent variable. This variable was then regressed against each of the six managerial behavior roles (the dependent variables). The significant T or P-values for all six regressions were less than alpha of .05, this implies that Ho: $B_1 = 0$ is not true and that a linear relationship exist for all six roles.

The computed R values, which measure the degree of the linear relationships (8:449), indicated a weak (for roles two and four) to moderate (for roles one, three, five, and six) correlation between the variables. The R^2 values, which describes how much of the sample variation in the dependent variables can be explained by variation in the independent variable, provided little (for role four) to a moderate amount (for the remaining roles) of explanatory power to the models. The results of this analysis are

TABLE 2

RESULTS OF THE SECOND T-TEST
FOR SPORTS PARTICIPATION

GROUP 1 -- HIGH PARTICIPATION
GROUP 2 -- LOW OR NO PARTICIPATION

VARIABLE	NO. OF CASES	MEAN	STD DEV	STD ERR	T VALUE	DEG OF FREE	P VALUE
ROLE 1 *							
GROUP 1	17	2.62	0.55	0.13	3.07	25.52	0.005
GROUP 2	17	1.80	0.96	0.23			
ROLE 2 +							
GROUP 1	17	2.46	0.59	0.14	2.91	32.00	0.006
GROUP 2	17	1.78	0.76	0.18			
ROLE 3 *							
GROUP 1	17	2.48	0.42	0.10	4.12	22.80	0.000
GROUP 2	17	1.50	0.88	0.21			
ROLE 4 +							
GROUP 1	17	1.42	1.09	0.27	1.13	32.00	0.267
GROUP 2	17	1.01	0.99	0.24			
ROLE 5 +							
GROUP 1	17	2.39	0.52	0.13	4.19	32.00	0.000
GROUP 2	17	1.41	0.81	0.19			
ROLE 6 +							
GROUP 1	17	1.94	0.64	0.16	3.66	32.00	0.001
GROUP 2	17	1.02	0.80	0.19			

+ = Calculations based on a pooled variance estimator
* = Calculations based on a separate variance estimator

presented in Table 3.

Qualitative Assessment. To gain additional insight, concerning Hypothesis 1, a "qualitative" analysis of the written comments made by the program managers was performed. Each program manager was asked to present any comments that they may have on the statement, "participation in sports is a definite influencing factor on managerial behavior". Using the composition of the two groups described in the first T-test, 68.2% of the program managers in the first group provided positive comments about the statement, 4.5% made negative comments, and 27.3% had no comments. The percentages for the second group were, 33.3% positive, 8.3% negative, and 58.3% no comments. Additionally, 78.9% of all the positive comments made were from managers in the first group as opposed to 21.1% being made by managers in the second group (see Table 4). A complete listing of all the comments made is provided in Appendix C.

When considering the composition of the two groups described in the second T-test, 82.4% of the program managers in the first group provided positive comments about the statement, 5.9% made negative comments, and 11.8% had no comments. The percentages for the second group were, 29.4% positive, 5.9% negative, and 64.7% no comments. Additionally, 73.7% of all the positive comments made were from managers in the first group as opposed to 26.3% being made by managers in the second group (see Table 5).

The relationships identified in both groupings suggest

TABLE 3

RESULTS OF THE REGRESSION ANALYSIS
FOR SPORTS PARTICIPATION

Role 1

Multiple R:	.5028	Adjusted R Square:	.2294
R Square:	.2528	Standard Error:	.7668

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Years Par	.066	.019	.503	3.290	.0024
(Constant)	1.555	.239		6.484	.0000

Role 2

Multiple R:	.4473	Adjusted R Square:	.1751
R Square:	.2001	Standard Error:	.6816

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Years Par	.050	.018	.447	2.829	.0000
(Constant)	1.613	.213		7.566	.0000

Role 3

Multiple R:	.5476	Adjusted R Square:	.2780
R Square:	.2999	Standard Error:	.7113

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Years Par	.068	.018	.548	3.702	.0000
(Constant)	1.301	.222		5.850	.0000

TABLE 3 -- Continued

Role 4

Multiple R:	.3155	Adjusted R Square:	.0713
R Square:	.0995	Standard Error:	1.0148

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Years Par	.049	.026	.315	1.881	.0491
(Constant)	.716	.317		2.257	.0310

Role 5

Multiple R:	.6477	Adjusted R Square:	.4014
R Square:	.4195	Standard Error:	.6416

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Years Par	.080	.017	.648	4.809	.0000
(Constant)	1.093	.201		5.446	.0000

Role 6

Multiple R:	.5388	Adjusted R Square:	.2681
R Square:	.2903	Standard Error:	.7279

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Years Par	.068	.019	.539	3.613	.0010
(Constant)	.791	.228		3.477	.0015

TABLE 4

FIRST CROSS-TABULATION OF SPORTS PARTICIPATION BY COMMENTS MADE

GROUP 1 -- HIGH PARTICIPATION
GROUP 2 -- LOW OR NO PARTICIPATION

COUNT ROW PCT COL PCT	POSITIVE COMMENTS	NEGATIVE COMMENTS	NO COMMENTS
GROUP 1	15 68.2 78.9	1 4.5 50.0	6 27.3 46.2
GROUP 2	4 33.3 21.1	1 8.3 50.0	7 58.3 53.8

TABLE 5

SECOND CROSS-TABULATION OF SPORTS PARTICIPATION BY COMMENTS MADE

GROUP 1 -- HIGH PARTICIPATION
GROUP 2 -- LOW OR NO PARTICIPATION

COUNT ROW PCT COL PCT	POSITIVE COMMENTS	NEGATIVE COMMENTS	NO COMMENTS
GROUP 1	14 82.4 73.7	1 5.9 50.0	2 11.8 15.4
GROUP 2	5 29.4 26.3	1 5.9 50.0	11 64.7 84.6

that those program managers who were identified as having a high degree of sports participation were more amiable to the statement that "participation in sports is a definite influencing factor on managerial behavior", than were those individuals identified as having a low degree of sports participation. It is further stressed that, whereas the quantitative analysis of this study was performed using data provided by both the program manager and the additional raters, this, and the remaining qualitative analyses, were performed using only the written comments provided by the program managers.

Hypothesis Two

The second hypothesis addressed in this study states that, of those program managers who have played sports, the managerial behavior of those who have concentrated more on team sports will be rated significantly higher than the ratings of those who have concentrated more on individual sports. The techniques used to evaluate the specific sub-relationships were the subprograms T-TEST and CROSSTABS.

Differences Between Group Means. Like the first hypothesis, an arbitrary determination was made as to what constituted concentration in team sports vs concentration in individual sports. For this study, if the program manager had played one team sport for at least three years or two team sports for at least two years each, he/she was then considered in the first group. Those who played a less

amount of team sports and those who concentrated more on individual sports were placed in group number two, the "concentrated more on individual sports" group.

Group number one consisted of 24 program managers and group number two was made up of the remaining 10. Because all 34 managers were shown to have some sports experience, all 34 were considered in this analysis. Test statistics (T-test) were calculated to compare the differences between the mean scores of the two groups for each of the six managerial behavior roles (see Table 6). The mean scores for all six roles were higher in the first group than they were in the second. However, for an alpha set at 0.05, only roles two and five were significantly higher. The differences between the means for each role had a respective P-value of: 0.067, 0.035, 0.064, 0.090, 0.001, and 0.087.

Qualitative Assessment. The final technique used to evaluate this hypothesis was an analysis of the cross-tabulations of team sports vs individual sports by the type and quantity of written comments made. As was previously stated, each program manager was asked to present any comments that they may have on the statement, "participation in sports is a definite influencing factor on managerial behavior". Using the composition of the two groups described in the T-test, 70.8% of the program managers in the first group provided positive comments about the statement, 4.2% made negative comments, and 25.0% had no comments. The percentages for the second group were, 20.0%

TABLE 6

RESULTS OF THE T-TEST FOR
TEAM SPORTS VS INDIVIDUAL SPORTS

GROUP 1 -- CONCENTRATION IN TEAM SPORTS
GROUP 2 -- CONCENTRATION IN INDIVIDUAL SPORTS

VARIABLE	NO. OF CASES	MEAN	STD DEV	STD ERR	T VALUE	DEG OF FREE	P VALUE
ROLE 1 *							
GROUP 1	24	2.44	0.65	0.13	2.02	11.57	0.067
GROUP 2	10	1.67	1.13	0.36			
ROLE 2 +							
GROUP 1	24	2.29	0.59	0.12	2.21	32.00	0.035
GROUP 2	10	1.70	0.94	0.29			
ROLE 3 +							
GROUP 1	24	2.16	0.77	0.16	1.92	32.00	0.064
GROUP 2	10	1.58	0.89	0.28			
ROLE 4 +							
GROUP 1	24	1.41	1.07	0.22	1.75	32.00	0.090
GROUP 2	10	0.74	0.89	0.28			
ROLE 5 +							
GROUP 1	24	2.19	0.61	0.13	3.64	32.00	0.001
GROUP 2	10	1.21	0.91	0.29			
ROLE 6 +							
GROUP 1	24	1.64	0.82	0.17	1.76	32.00	0.087
GROUP 2	10	1.09	0.83	0.26			

+ = Calculations based on a pooled variance estimator
* = Calculations based on a separate variance estimator

TABLE 7

CROSS-TABULATION OF TEAM SPORTS VS
INDIVIDUAL SPORTS BY COMMENTS MADE

GROUP 1 -- CONCENTRATION IN TEAM SPORTS
GROUP 2 -- CONCENTRATION IN INDIVIDUAL SPORTS

COUNT ROW PCT COL PCT	POSITIVE COMMENTS	NEGATIVE COMMENTS	NO COMMENTS
GROUP 1	17 70.8 89.5	1 4.2 50.0	6 25.0 46.2
GROUP 2	2 20.0 10.5	1 10.0 50.0	7 70.0 53.8

positive, 10.0% negative, and 70.0% no comments. Additionally, 89.5% of all the positive comments made were from managers in the first group as opposed to 10.5% being made by managers in the second group. The results of this analysis are presented in Table 7.

This relationship suggest that those program managers who were identified as having concentrated more on team sports were more amiable to the statement, "participation in sports is a definite influencing factor on managerial behavior", than were those individuals identified as having concentrated more on individual sports.

Hypothesis Three

The third hypothesis addressed in this study states that, of those program managers who have played team sports, the managerial behavior of those who have concen-

trated more on sports with high degrees of reciprocal interdependence (RI) will be rated significantly higher than the ratings of those who have concentrated more on sports with high degrees of pooled interdependence (PI) or sequential interdependence (SI). The techniques used to evaluate the specific sub-relationships were the subprogram T-TEST and CROSSTABS.

Differences Between Group Means. Again, because of the exploratory nature of this study, an arbitrary determination was made as to what constituted concentration within the different types of team sports. For this study, if the program manager had played one team sport with a high degree of RI for a least three years or two team sports with high degrees of RI for at least two years each, he/she was then considered in the first group. Of those remaining managers who had concentrated on team sports, those who had played one team sport with a high degree of SI for at least three years or two team sports with high degrees of SI for at least two years each were associated with the second group. The remaining team sport players were placed in the group number three, the "concentration on sports with high degrees of PI" group.

Group number one consisted of 13 program managers, group number two was made up of four, and group number three was composed of seven individuals. Because the sample sizes were so small for groups two and three, it was decided to combine those two groups into a single group consisting

of those program managers who had concentrated more on sports with either a high degree of SI or a high degree of PI. The groupings for this hypothesis were redetermined to be 13 program managers in group one and 11 in group two, the "concentration on sports with high degrees of SI or PI" group. It is noted that the 24 program managers identified for this hypothesis are the same managers identified as concentrating more on team sports in the previous hypothesis.

Test statistics (T-test) were then calculated to compare the differences between the mean scores of the two groups for each of the six managerial behavior roles (see Table 8). The mean scores for all six roles were higher in the first group than they were in the second. Additionally, for an alpha set at 0.05, all roles, except roles two and four, were significantly higher. The differences between the means for each role had a respective P-value of: 0.037, 0.067, 0.026, 0.366, 0.028, and 0.021.

As an interesting sidenote, although the three groupings approach for analyzing this hypothesis was restructured (because of the low sample sizes), the T-TEST subprogram was run on the original three groupings anyway to satisfy the curiosity of the researcher. The results were not to different from those of the formal test. The mean scores for all six roles were still highest for those program managers in the first group; however, the mean scores for those managers in the second group were lower, for all six

TABLE 8

RESULTS OF THE T-TEST FOR
DIFFERENCES WITHIN TEAM SPORTS

GROUP 1 -- CONCENTRATION IN SPORTS WITH HIGH DEGREES OF RECIPROCAL INTERDEPENDENCE

GROUP 2 -- CONCENTRATION IN SPORTS WITH HIGH DEGREES OF POOLED OR SEQUENTIAL INTERDEPENDENCE

VARIABLE	NO. OF CASES	MEAN	STD DEV	STD ERR	T VALUE	DEG OF FREE	P VALUE
ROLE 1 +							
GROUP 1	13	2.69	0.57	0.16	2.21	22.00	0.037
GROUP 2	11	2.15	0.63	0.19			
ROLE 2 +							
GROUP 1	13	2.49	0.54	0.51	1.93	22.00	0.067
GROUP 2	11	2.05	0.59	0.18			
ROLE 3 *							
GROUP 1	13	2.49	0.43	0.12	2.48	13.76	0.026
GROUP 2	11	1.76	0.89	0.27			
ROLE 4 +							
GROUP 1	13	1.59	0.98	0.27	0.92	22.00	0.366
GROUP 2	11	1.19	1.17	0.35			
ROLE 5 +							
GROUP 1	13	2.43	0.51	0.14	2.35	22.00	0.028
GROUP 2	11	1.89	0.62	0.19			
ROLE 6 +							
GROUP 1	13	1.99	0.67	0.19	2.48	22.00	0.021
GROUP 2	11	1.23	0.82	0.25			

+ = Calculations based on a pooled variance estimator
* - Calculations based on a separate variance estimator

roles, than they were for managers in the third group. However, for an alpha set at 0.05 there were no significant differences between groups two and three.

Qualitative Assessment. The final technique used to evaluate this hypothesis was a qualitative assessment of the written comments made by program managers concerning the statement, "participation in sports is a definite influencing factor on managerial behavior". A cross tabulation of differences within team sports by the type and quantity of written comments was made. Using the composition of the two groups described in the formal T-test, 92.3% of the program managers in the first group provided positive comments about the statement, 7.7% made negative comments, and 0% had no comments. The percentages for the second group were, 45.5% positive, 0% negative, and 54.5% no comments. Additionally, 70.6% of all the positive comments made were from managers in the first group as opposed to 29.4% being made by managers in the second group (see Table 9).

This relationship suggest that those program managers who were identified as having concentrated more on team sports with high degrees of RI were more amiable to the statement, "participation in sports is a definite influencing factor on managerial behavior", than were those individuals identified as having concentrated more on sports with high degrees of SI or PI.

TABLE 9

CROSS-TABULATION OF DIFFERENCES WITHIN TEAM SPORTS BY COMMENTS MADE

GROUP 1 -- CONCENTRATION IN SPORTS WITH HIGH DEGREES OF RECIPROCAL INTERDEPENDENCE

GROUP 2 -- CONCENTRATION IN SPORTS WITH HIGH DEGREES OF POOLED OR SEQUENTIAL INTERDEPENDENCE

COUNT ROW PCT COL PCT	POSITIVE COMMENTS	NEGATIVE COMMENTS	NO COMMENTS
GROUP 1	12 92.3 70.2	1 7.7 100.0	0
GROUP 2	5 45.5 29.4	0	6 54.5 100.0

Hypothesis Four

The fourth hypothesis addressed in this study states that, of those program managers who have played sports, the managerial behavior of those who are identified as having a high degree of athletic prowess will be rated higher than the ratings of those identified as having a lesser degree of athletic prowess. The techniques used to evaluate the specific sub-relationships were the subprograms FREQUENCIES, T-TEST, CROSSTABS, and REGRESSION.

Differences Between Group Means. Three different cases were considered in evaluating this hypothesis. Therefore, there were three different sets of T-tests performed to determine if significant differences existed between the

group means. Each set of T-test made use of different sets of groupings. The groupings for the first case were determined by the median value of how each program manager rated his/her athletic ability in up to four different sports. For each sport that the manager played (up to four), he/she was asked to rate his/her athletic ability in that particular sport. A five-point rating scale ranging from +5 (well above average) to +1 (well below average) was used to determine athletic ability scores. The scores were added together for each sport the manager participated in and a total overall score was computed.

The overall scores ranged from two to 28 for the 34 program managers with a median score of approximately seven. Therefore, using the median value as the criteria for determining the composition of the two group, those managers with a score greater than or equal to eight were considered in the first group. Those who had a score of seven or less were placed in group number two, the "low degree of athletic ability" group.

Using the procedure above, group number one consisted of 18 program managers and group number two was made up of the remaining 16. Test statistics (T-test) were then calculated to compare the differences between the mean scores of the two groups for each of the six managerial behavior roles (see Table 10). The mean scores for all six roles were higher in the first group than they were in the second. Additionally, for an alpha set at 0.05, all roles,

TABLE 10

RESULTS OF THE FIRST T-TEST
FOR ATHLETIC PROWESS

GROUP 1 -- HIGH DEGREE OF ATHLETIC ABILITY
GROUP 2 -- LOW DEGREE OF ATHLETIC ABILITY

VARIABLE	NO. OF CASES	MEAN	STD DEV	STD ERR	T VALUE	DEG OF FREE	P VALUE
ROLE 1 *							
GROUP 1	18	2.60	0.57	0.13	2.99	23.64	0.006
GROUP 2	16	1.78	0.97	0.24			
ROLE 2 +							
GROUP 1	18	2.49	0.52	0.12	3.65	32.00	0.001
GROUP 2	16	1.69	0.75	0.19			
ROLE 3 *							
GROUP 1	18	2.40	0.49	0.12	3.40	22.25	0.003
GROUP 2	16	1.53	0.92	0.23			
ROLE 4 +							
GROUP 1	18	1.52	1.03	0.24	1.84	32.00	0.074
GROUP 2	16	0.67	1.01	0.25			
ROLE 5 +							
GROUP 1	18	2.34	0.58	0.14	3.88	32.00	0.000
GROUP 2	16	1.41	0.81	0.20			
ROLE 6 +							
GROUP 1	18	1.92	0.70	0.17	3.75	32.00	0.001
GROUP 2	16	0.99	0.74	0.19			

+ = Calculations based on a pooled variance estimator
* = Calculations based on a separate variance estimator

except for role four, were significantly higher. The differences between the means for each role had a respective P-value of: 0.006, 0.001, 0.003, 0.074, 0.000, and 0.001.

The groupings for the second case were determined by the median value of the highest level of play that a manager had achieved for up to four different sports. For each sport that the manager played (up to four), a determination was made as to the highest level of play achieved. The level of play ranged from a value of +1 for participation in youth community league, junior high school, or high school intramural level sports; a value of +2 for participation in high school varsity/junior varsity, college intramural, military intramural, or adult community league level sports; and, a value of +3 for participation in college intercollegiate or military intercommand/service level sports. Each manager was awarded one score per sport, depending on the highest level of play achieved. The scores were added together for each sport the manager participated in and a total overall score was computed.

The overall scores ranged from one to 10 for the 34 program managers with a median score of approximately five. Therefore, using the median value as the criteria for determining the composition of the two group, those managers with a score greater than or equal to six were assigned to the first group. Those who had a score of five or less were placed in group number two, the "low level of sports play" group.

TABLE 11

RESULTS OF THE SECOND T-TEST
FOR ATHLETIC PROWESS

GROUP 1 -- HIGH LEVEL OF SPORTS PLAY
GROUP 2 -- LOW LEVEL OF SPORTS PLAY

VARIABLE	NO. OF CASES	MEAN	STD DEV	STD ERR	T VALUE	DEG OF FREE	P VALUE
ROLE 1 +							
GROUP 1	16	2.57	0.59	0.15	2.36	32.00	0.025
GROUP 2	18	1.90	0.98	0.23			
ROLE 2 +							
GROUP 1	16	2.41	0.56	0.14	2.31	32.00	0.027
GROUP 2	18	1.85	0.81	0.19			
ROLE 3 *							
GROUP 1	16	2.30	0.51	0.12	2.24	26.34	0.034
GROUP 2	18	1.71	0.98	0.23			
ROLE 4 +							
GROUP 1	16	1.42	1.03	0.26	1.08	32.00	0.288
GROUP 2	18	1.03	1.06	0.25			
ROLE 5 +							
GROUP 1	16	2.27	0.64	0.16	2.72	32.00	0.011
GROUP 2	18	1.57	0.85	0.20			
ROLE 6 +							
GROUP 1	16	1.82	0.76	0.19	2.37	32.00	0.024
GROUP 2	18	1.18	0.83	0.19			

+ = Calculations based on a pooled variance estimator
* = Calculations based on a separate variance estimator

With this procedure, group number one consisted of 16 program managers and group number two was made up of the remaining 18. Test statistics (T-test) were then calculated to compare the differences between the mean scores of the two groups for each of the six managerial behavior roles (see Table 11). The mean scores for all six roles were higher in the first group than they were in the second. Additionally, for an alpha set at 0.05, all roles, except for role four, were significantly higher. The differences between the means for each role had a respective P-value of: 0.025, 0.027, 0.034, 0.288, 0.011, and 0.024.

The groupings for the final case were determined by whether or not the program manager had ever been a team captain or equivalent. If a manager been a team captain or equivalent in at least one sport he/she was place in the first group. Those who did not meet this criteria were assigned to group number two, the "non-team captain or equivalent" group.

Using this method, group number one consisted of 25 program managers and group number two was made up of the remaining nine. Test statistics were then calculated to compare the differences between the mean scores of the two groups for each of the six managerial behavior roles (see Table 12). The mean scores for all six roles were higher in the first group than they were in the second. However, for an alpha set at 0.05, only roles one and five were significantly higher. The differences between the means for each

TABLE 12

RESULTS OF THE THIRD T-TEST
FOR ATHLETIC PROWESS

GROUP 1 -- TEAM CAPTAIN OR EQUIVALENT IN AT LEAST ONE SPORT
GROUP 2 -- NON-TEAM CAPTAIN OR EQUIVALENT IN ANY SPORT

VARIABLE	NO. OF CASES	MEAN	STD DEV	STD ERR	T VALUE	DEG OF FREE	P VALUE
ROLE 1 +							
GROUP 1	25	2.42	0.71	0.14	2.43	32.00	0.021
GROUP 2	9	1.65	1.06	0.35			
ROLE 2 +							
GROUP 1	25	2.25	0.65	0.13	1.79	32.00	0.082
GROUP 2	9	1.74	0.92	0.31			
ROLE 3 +							
GROUP 1	25	2.14	0.84	0.17	1.78	32.00	0.085
GROUP 2	9	1.58	0.72	0.24			
ROLE 4 +							
GROUP 1	25	1.36	1.04	0.21	1.33	32.00	0.191
GROUP 2	9	0.82	1.06	0.35			
ROLE 5 +							
GROUP 1	25	2.11	0.68	0.14	2.66	32.00	0.012
GROUP 2	9	1.32	0.97	0.32			
ROLE 6 +							
GROUP 1	25	1.65	0.82	0.16	2.00	32.00	0.054
GROUP 2	9	1.01	0.80	0.27			

+ = Calculations based on a pooled variance estimator
* = Calculations based on a separate variance estimator

role had a respective P-value of: 0.021, 0.082, 0.085, 0.191, 0.012, and 0.054.

Regression Analysis. The second technique used to evaluate this hypothesis was regression analysis. The overall athletic ability scores, the overall highest level of play scores, and the number of sports that the manager was a team captain or equivalent in were used as the independent variables. These variables were then regressed against each of the six managerial behavior roles (the dependent variables). Using the stepwise regression approach, the subprogram REGRESSION was run to perform the analysis.

According to Devore (8:500), the stepwise regression approach, the most commonly used procedure in regression, starts off by adding independent variables to the model. The first variable considered for entry into the equation is the one with the largest positive or negative correlation with the dependent variable. If it meets the selection criteria, a P-value (of the F statistic) less than or equal to 0.05, the variable is entered into the equation and the procedure is repeated. The procedure stops when there are no other variables that meet entry requirements.

This regression approach resulted in only one independent variable being entered into the equation. That variable, which was the same for all six models (representing the six different managerial roles) was the overall athletic ability scores. Entering into the equation

through this regression method implies that the overall athletic ability scores met the selection criteria of a P-value less than or equal to 0.05. The significant T or P-values for all six models were in fact less than alpha of 0.05. This further implies that $H_0: B_1 = 0$ is not true and that linear relationships exist for all six roles.

The computed R values indicated a weak (for role four) to moderate (for the remaining roles) correlation between the independent and dependent variables. The R^2 values provided a moderate (for role four) to strong amount (for the remaining roles) of explanatory power to the models. The results of this analysis are presented in Table 13.

Qualitative Assessment. The final technique used to evaluate this hypothesis was a qualitative analysis of the cross-tabulations of athletic prowess by the type and quantity of written comments made. As was previously stated, each program manager was asked to present any comments that they may have on the statement, "participation in sports is a definite influencing factor on managerial behavior". Because there were three separate cases examined for the variable athletic prowess, a separate cross-tabulation was computed for each case.

For the first case, using the composition of the two groups described in the first T-test, 77.8% of the program managers in the first group provided positive comments about the statement, 11.1% made negative comments, and 11.1% had no comments. The percentages for the second group were,

TABLE 13

RESULTS OF THE REGRESSION ANALYSIS
FOR ATHLETIC PROWESS

Role 1

Multiple R:	.6415	Adjusted R Square:	.3932
R Square:	.4115	Standard Error:	.6805

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Ath Prow	.134	.028	.642	4.731	.0000
(Constant)	1.041	.274		3.800	.0006

Role 2

Multiple R:	.6203	Adjusted R Square:	.3656
R Square:	.3848	Standard Error:	.5978

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Ath Prow	.112	.025	.620	4.474	.0001
(Constant)	1.142	.241		4.745	.0000

Role 3

Multiple R:	.6696	Adjusted R Square:	.4312
R Square:	.4484	Standard Error:	.6314

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Ath Prow	.134	.026	.669	5.101	.0000
(Constant)	.816	.254		3.210	.0030

TABLE 13 -- Continued

Role 4

Multiple R.	.3797	Adjusted R Square:	.1174
R Square:	.1442	Standard Error:	.9894

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Ath Prow	.096	.041	.379	2.322	.0268
(Constant)	.378	.398		.949	.3495

Role 5

Multiple R:	.6881	Adjusted R Square:	.4571
R Square:	.4735	Standard Error:	.6110

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Ath Prow	.137	.025	.688	5.365	.0000
(Constant)	.705	.246		2.864	.0073

Role 6

Multiple R:	.6416	Adjusted R Square:	.3932
R Square:	.4116	Standard Error:	.6628

Variables in the Equation

Variable	B	SE B	Beta	T-Value	Sig T
Ath Prow	.131	.028	.642	4.731	.0000
(Constant)	.337	.267		1.263	.2156

31.3% positive, 0% negative, and 68.8% no comments. Additionally, 73.7% of all the positive comments made were from managers in the first group as opposed to 26.3% being made by managers in the second group (see Table 14).

For the second case, using the composition of the two groups described in the second T-test, 87.5% of the program managers in the first group provided positive comments about the statement, 6.3% made negative comments, and 6.3% had no comments. The percentages for the second group were, 27.8% positive, 5.6% negative, and 66.7% no comments. Additionally, 73.7% of all the positive comments made were from managers in the first group as opposed to 26.3% being made by managers in the second group (see Table 15).

For the final case, using the composition of the two groups described in the third T-test, 64.0% of the program managers in the first group provided positive comments about the statement, 4.0% made negative comments, and 32.0% had no comments. The percentages for the second group were, 33.3% positive, 11.1% negative, and 55.6% no comments. Additionally, 84.2% of all the positive comments made were from managers in the first group as opposed to 15.8% being made by managers in the second group (see Table 16).

The relationships identified within all three groupings suggest that those program managers who were identified as having a high degree of athletic prowess were more amiable to the statement that "participation in sports is a definite influencing factor on managerial behavior", than were those

TABLE 14

FIRST CROSS-TABULATION OF ATHLETIC PROWESS BY COMMENTS MADE

GROUP 1 -- HIGH DEGREE OF ATHLETIC ABILITY
GROUP 2 -- LOW DEGREE OF ATHLETIC ABILITY

COUNT ROW PCT COL PCT	POSITIVE COMMENTS	NEGATIVE COMMENTS	NO COMMENTS
GROUP 1	14 77.8 73.7	2 11.1 100.0	2 11.1 15.4
GROUP 2	5 31.3 26.3	0	11 68.8 84.6

TABLE 15

SECOND CROSS-TABULATION OF ATHLETIC PROWESS BY COMMENTS MADE

GROUP 1 -- HIGH LEVEL OF SPORTS PLAY
GROUP 2 -- LOW LEVEL OF SPORTS PLAY

COUNT ROW PCT COL PCT	POSITIVE COMMENTS	NEGATIVE COMMENTS	NO COMMENTS
GROUP 1	14 87.5 73.7	1 6.3 50.0	1 6.3 7.7
GROUP 2	5 27.8 26.3	1 5.6 50.0	12 66.7 92.3

TABLE 16

THIRD CROSS-TABULATION OF ATHLETIC PROWESS BY COMMENTS MADE

GROUP 1 -- TEAM CAPTAIN OR EQUIVALENT IN AT LEAST ON SPORT
GROUP 2 -- NEVER SERVED AS TEAM CAPTAIN OR EQUIVALENT IN ANY SPORT

COUNT ROW PCT COL PCT	POSITIVE COMMENTS	NEGATIVE COMMENTS	NO COMMENTS
GROUP 1	16 64.0 84.2	1 4.0 50.0	8 32.0 61.5
GROUP 2	3 33.3 15.8	1 11.1 50.0	5 55.6 38.5

individuals identified as having a lesser degree of athletic prowess.

Summary of T-Test

A summary of the significant differences between the group means for all 42 T-test (seven sets of six sub-hypotheses) is provided in Table 17.

Chapter Summary

This chapter presented the findings of the research, and described the formal analysis techniques that were used. The results of each analysis were presented in both tabular and narrative form. In the next chapter, the findings are discussed and each hypothesis is further addressed using the analysis from this section as support. In addition,

TABLE 17

SUMMARIZATION OF THE T-TEST

HYPOTHESIS	MANAGERIAL BEHAVIOR					
	1	2	3	4	5	6
H_1 : Managers who have played more sports will have higher mean scores than will those who have played less.	S	S	S	N	S	S
	S	S	S	N	S	S
H_2 : Managers who have concentrated more on team sports will have higher mean scores than will those who have concentrated more on individual sports.	N	S	N	N	S	N
H_3 : Within team sports, managers who have concentrated more on RI sports will have higher mean scores than will those who have concentrated on either PI or SI sports.	S	N	S	N	S	S
H_4 : Managers with higher degrees of athletic prowess will have higher mean scores than will those with less degrees of athletic prowess.	S	S	S	N	S	S
	S	S	S	N	S	S
	S	N	N	N	S	N

S = Significant differences in mean scores at alpha of 0.05
N = No significant differences at alpha of 0.05

Note: H_1 was evaluated using 2 sets of T-test
H_4 was evaluated using 3 sets of T-test
H_2 and H_3 were evaluated using 1 set of T-test each

RI refers to those sports with high degrees of reciprocal interdependence.

PI refers to those sports with high degrees of pooled interdependence.

SI refers to those sports with high degrees of sequential interdependence.

implications and general observations, drawn from the findings, are identified and discussed. Finally, recommendations for both further research and the field are presented.

V. Conclusions and Recommendations

Chapter Overview

This chapter addresses the results of the analysis and findings provided in the previous chapter for each of the four main hypotheses. In addition, recommendations for both further research and the field are also presented.

Hypotheses Overview

In general, this exploratory study has sought to build on limited existing empirical research and theory concerning the relationship between an individual's athletic background and subsequent managerial behavior. Specifically, the research was conducted through the formulation and evaluation of four major hypotheses:

1. Program managers who have played more sports will have higher managerial behavior mean scores than will those who have played less.
2. Program managers who have concentrated more on team sports will have higher mean scores than will those who have concentrated more on individual sports.
3. Within team sports, program managers who have concentrated more on sports with high degrees of reciprocal interdependence (basketball) will have higher mean scores than will those who have concentrated on either sports with high degrees of

pooled interdependence (baseball) or high degrees of sequential interdependence (football).

4. Program managers with higher degrees of athletic prowess will have higher mean scores than will those with less degrees of athletic prowess.

All four of the major hypotheses, as previously mentioned, consisted of six sub-hypotheses. Each of the sub-hypotheses represented the major hypotheses for a specific managerial behavior. Formulation of the sub-hypotheses were based on the six managerial roles identified by Morse and Wagner:

Role 1. Managing the organization's environment and its resources

Role 2. Organizing and coordinating

Role 3. Information handling

Role 4. Providing for growth and development

Role 5. Motivation and conflict handling

Role 6. Strategic problem-solving

Evaluation of the sub-hypotheses, and in turn the major hypotheses, were conducted by comparing the managerial behavior mean scores for all six managerial roles, for each of the major hypotheses. Interpretation of the results of these test, imply that those managers with the higher mean scores are better performers in that particular managerial role.

Hypothesis One

The first major hypothesis addressed in this study

states that, the managerial behavior of program managers who have played sports will be rated significantly higher than the ratings of program managers who have played less or no sports at all.

The results of the first T-test on the differences between mean scores of the two groups, for each of the six managerial behavior roles, indicate that for all the roles, except role four (providing for growth and development), those program managers who have played more sports than others did indeed have significantly higher managerial behavior mean scores.

The second T-test, where a different criteria for determining the composition of the groups was used, resulted in the same statistical findings as did the first test. The indication was that for every role, except role four (providing for growth and development), the mean managerial scores were significantly higher for those program managers who have participated extensively in athletics compared to those who have participated less (all 34 program managers used in the study had played some sports).

For both T-test, the implication made is that those managers with the significantly higher mean scores (those managers who have participated extensively in athletics) are better performers, in all but role four, than are those who have participated less in athletics.

The results of the regression analysis indicate the existence of a significant positive linear relationship

between the number of years played and the mean behavior scores for all six roles. Additionally, the R^2 value of at least 0.21 for all roles, except role four which had a value of 0.10, provided a moderate amount of explanatory power to the models.

The empirical results support the first hypothesis that a significant, positive relationship exists in the on-the-job performance of those program managers who have participated extensively in athletic competition.

Hypothesis Two

The second major hypothesis presented in this study states that, of those program managers who have played sports, the managerial behavior of those who have concentrated more on team sports will be rated significantly higher than the ratings of those who have concentrated more on individual sports.

The results of the T-test on the differences between mean scores of the two groups, for each of the six managerial behavior roles, indicate that for all the roles, those program managers who have concentrated more on team sports had higher mean scores than did those who have concentrated more on individual sports. However, at a 0.05 level of significants, only roles two (organizing and coordinating) and five (motivation and conflict handling) were significantly nigher.

The implication made from evaluating this hypothesis is that those managers with significantly higher mean scores

(those managers who have concentrated more on team sports) in roles two and five are better performers, in those roles, than are those who have concentrated more on individual sports.

The empirical results partially support the second hypothesis that the managerial performance of those program managers who have concentrated more on team sports is significantly higher than those who have concentrated more on individual sports.

Hypothesis Three

The third major hypothesis addressed in this study states that, of those program managers who have played team sports, the managerial behavior of those who have concentrated more on team sports with high degrees of reciprocal interdependence (RI) will be rated significantly higher than the ratings of those who have concentrated more on sports with high degrees of pooled interdependence (PI) or sequential interdependence (SI).

As discussed in the previous chapter, the differences between the means of each of the three groups were not formally considered because the sample sizes were relatively small for groups two and three -- four subjects for the PI sports and seven for the SI sports. As a result those two groups were combined into a single group consisting of those program managers who had concentrated more on sports with either a high degree of SI or a high degree of PI.

The T-test was then run on the "concentrated more on

team sports with high degrees of RI" group compared to the combined group. The results of the test, for each of the six managerial behavior roles, indicated that for all the roles, except roles two (organizing and coordinating) and four (providing for growth and development), those program managers who have concentrated more on sports with high degrees of RI had significantly higher mean scores than did those who have concentrated more on sports with either a high degree of SI or PI.

The implication that can be drawn from this test is that those managers with the significantly higher mean scores (those managers who have concentrated more on team sports with high degrees of RI) are better performers, in all but roles two and four, than are those who have concentrated more on sports with either a high degree of SI or a high degree of PI.

The empirical results support this hypothesis and suggest that there is a significant difference in the on-the-job performance of those program managers who have concentrated more on sports with high degrees of RI (in their favor) in comparison to those who have concentrated more on sports with either a high degree of SI or PI.

Hypothesis Four

The fourth major hypothesis addressed in this study states that, of those program managers who have participated in athletics, the managerial behavior of those who are identified as having a high degree of athletic prowess will

be rated higher than the ratings of those identified as having a lesser degree of athletic prowess.

The results of the first T-test on the differences between mean scores of the two groups, for each of the six managerial behavior roles, indicated that for all the roles, except role four (providing for growth and development), those program managers who were considered as having higher degrees of athletic ability had significantly higher managerial behavior mean scores than did those managers who were considered as having lesser degrees of athletic ability.

The second T-test, where a different criteria for determining the composition of the groups was used, resulted in the exact same statistical findings as did the first test. The indication was that for every role, except role four (providing for growth and development), the mean managerial scores were significantly higher for those program managers who were considered to have competed in sports on a high level of play compared to those who were considered to have competed on a lower level.

The results of the final T-test, where a third criteria for evaluating the hypothesis was used, indicated that for all six roles, those program managers who had been a team captain or equivalent in at least one sport had higher mean scores than did those who were non-team captains or equivalents in any sport. However, at a 0.05 level of significants, only roles one (managing the organization's environ-

ment and its resources) and five (motivation and conflict handling) were significantly higher.

For the first two T-test, the implication made is that those managers with the significantly higher mean scores (those managers who are identified as having a high degree of athletic prowess) are better performers, in all but role four, than are those who are identified as having a lesser degree of athletic prowess. The implication made about the third test is that those managers with significantly higher mean scores in roles one and five are better performers, in those roles, than are those who are identified as having a lesser degree of athletic prowess.

The results of the regression analysis indicate the existence of a significant positive linear relationship between overall athletic ability and the mean behavior scores for all six roles. Additionally, the R^2 value of at least 0.41 for all roles, except role four (providing for growth and development) which had a value of 0.14, provided strong explanatory power to the models

The empirical results support this hypothesis that a significant, positive relationship exists in the on-the-job performance of program managers and their degree of athletic prowess.

General Observations

The overall outcome of all the test performed tend to support the position that participation in sports does indeed have some effect on the managerial performance of Air

Force program managers. The relationship was shown to be significant in all areas addressed -- amount of sports played, type of sports played, and athletic prowess in sports in general.

More specific conclusions can also be generated from this relationship. It is noted that for every test performed in this study, role five, motivation and conflict handling, the role which required the highest degree of interpersonal skills, had the highest mean scores and provided the strongest relationship in all four hypothesis. This implies that those program managers who have participated heavily in sports in general and high degrees of reciprocal interdependence sports in specific tend to outperform their counterparts in this role, by a greater margin, than they do in the other five roles. This was also the case for those program managers who were identified as having a high degree of athletic prowess. This observation can best be explained, perhaps, by selected material from the literature review of this study.

Motivation and conflict handling, as it turns out, is the same role that Morse and Wagner (22:34) identified as the one that managers should increase concentration on the more their managerial position requires working through and with people in the organization, regardless of the type of organization. It is also the same role that Thamhain and Wilemon (34:88) alluded to as the one program managers should concentrate most on to achieve program success.

And in addition, it is also the role that Keidel (17:9) implies that athletes take on, through their interactions with one another, the higher the degrees of reciprocal interdependence of the sport they play.

The implication of role five providing the strongest relationship supports the basic crux of this thesis. If participation in sports, in general, can be viewed as a training ground for developing interpersonal skills; and if the degree of "interpersonal skills" training can be viewed as a function of the specific types of sports that the participant is associated with specifically (as suggested in the hypotheses formulation section of this document), then one would expect the amount of interpersonal skill development to increase from participation in sports in general to the participation in the sports with the highest amount of reciprocal interdependence (ie. basketball, hockey, soccer).

The empirical results of this study indicate that the degree of performance consistently increases in role five, which requires the greatest amount of interpersonal skills, as one goes from extensive participation in sports in general (Hypothesis 1) to team sports vs. individual sports (Hypothesis 2) to team sports with high degrees of reciprocal interdependence vs. team sports with lesser degrees of reciprocal interdependence (Hypothesis 3). A possible explanation for this could be that the increased performance is due to the amount of "interpersonal skills" training received through sports participation.

A second conclusion to be made is that, regardless of sports background, for every test performed, role four, providing for growth and development, resulted in the weakest relationship in all four major hypotheses. Additionally, for every T-test performed, there were no significant differences between the mean scores for any of the groupings in this role. The reason for this, perhaps, is due to the nature of the matrix organizational structure.

In a matrix, a program manager has other professionals, of which he has little or no authority over, as program team-members. In this type of relationship, program managers would be less concerned about the professional growth of other professionals, of which they have little or no control over any way, than would a more functional manager with "pure" subordinates working for him/her.

In conclusion, the observed outcome of this study combined with the writings identified in the literature review tend to support the position that participation in sports in general and sports with high degrees of reciprocal interdependence specifically, may provide excellent training grounds for the development of the necessary interpersonal skills required of successful managers.

If this relationship is indeed causal, the implications are numerous. For example, individuals can be encouraged to participate in sports at a young age and thereby benefit from early nurturing of their interpersonal skills prior to the beginning of their professional careers. In another

example, current managers, not participating in sports or participating at low levels can begin or increase their participation in an effort to improve their interpersonal skills.

Recommendations

In summary, this exploratory study has sought to build on limited existing empirical research and theory concerning the relationship between an individuals athletic background and subsequent managerial performance. Further research will undoubtedly aid in furthering this understanding. In an effort to support that process, several recommendations are made.

First, the method of determining the groupings to be tested in several of the hypotheses were completely arbitrary. For example, in Hypothesis 2, if a program manager had played one team sport for at least three years or two team sports for at least two years each, he/she was then considered in the group that concentrated more on team sports. Although this was not a problem for this study, future researchers may wish to take a less arbitrary approach.

Second, the research was done within the context of Air Force program managers assigned to Aeronautical Systems Division (ASD), Air Force Systems Command (AFSC). That is, the empirical data was collected from one particular type of manager -- the program manager. It is recommended that the hypotheses be tested within other managerial contexts.

Third, the data was collected within only one organizational context -- the matrix. The nature of the matrix organizational structure may account for a certain percentage of the results of this study. Therefore, it is recommended that other organizational settings be studied, such as along functional lines.

Fourth, future research in this area can also be accomplished using other methods of measuring sports experience and managerial behavior and performance of managers.

Finally, the data collected for this study can be used for other than investigating the relationship between sports participation and managerial behavior. The surveys used measured the managerial performance of program managers in terms of how the manager rated himself/herself and how they were rated by the additional evaluators. It is recommended that additional research, using the existing data base, be conducted to investigate any differences in how a manager evaluates himself/herself in relation to how they are evaluated by others.

In conclusion, this research does not claim that participation in sports is undeniably a major influencing factor on managerial behavior. The research does assert, however, that a relationship does, statistically, appear to exist. With this in mind, to help develop the necessary interpersonal skills required for managerial success, it is recommended that all current and future Air Force officers

be strongly encouraged to participate in sports as much as possible. This participation should be in sports in general, in team sports specifically, and in team sports with high degrees of reciprocal interdependence more specifically.

Appendix A: Survey Instrument

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT-PATTERSON AIR FORCE BASE OH 45433-6583

REPLY TO ATTN OF LSG (Capt Walters, 56569) 30 Jun 1986

SUBJECT Sports Participation and Managerial Behavior Survey Package

TO

1. This survey will be used to determine if participation in sports influences on-the-job behavior exhibited by program managers. Two types of surveys are enclosed; one for you as a program manager to complete, and a similiar one which will be completed by personnel you are professionally related to. You are in a position to make an important contribution to this AFIT research project. The data collected will be used to evaluate the claim that participation in sports enhances the development of leadership and interpersonal skills.

2. Please take the time to complete the attached questionnaire and return it in the enclosed envelope within 7 days of receipt. Also, please pass on the three additional survey packages to the appropriate individuals. One package goes to your supervisor or equivalent and the other two go to any two functional specialists that you work with (ie. the engineer, the configuration manager, the test manager, the buyer/PCO, etc.). These individuals, in turn, will complete the appropriate questionnaire which addresses their perception of your managerial behavior. Your individual response will be combined with other responses and will not be attributed to you personally.

3. Your participation is completely voluntary, but we would certainly appreciate your help.

4. The faculty advisor for this project is Capt T. Triscari (53355).

R Taliaferro

RICHARD T. TALIAFERRO
Head, Dept of Sys Acq Mgt
School of Systems and Logistics

3 Atch
1. Questionnaire
2. Return Envelope
3. 3 Additional Survey Packages

USAF Survey Control Number 86-93 Expires 1 Sep 86

THE SPORTS PARTICICATION

AND MANAGERIAL BEHAVIOR SURVEY

Purpose

Research has shown that there are several factors which determine on-the-job behavior exhibited by managers. These factors include such things as education, experience, age, sex, personality, individual values, and the specific situation that the manager is faced with. The purpose of this survey is to obtain the data needed to determine if participation in sports is one of these influencing factors on managerial behavior -- more specifically, on the managerial behavior of Air Force Acquisition Project Officers who are program/project managers.

General Instructions

This survey is divided into three parts and will take approximately 45 minutes to complete. Part I asks you to answer questions pertaining to your observed managerial behavior. Part II asks you to answer questions pertaining to any organized sports experience that you may have. Part III asks you to answer questions pertaining to your professional background and your current job.

Nonattribution applies to this survey. The number assigned to this particular copy of the survey is only to be used to collate your responses with those of the individuals evaluating your managerial behavior. Your name, therefore, is not associated with this copy of the survey nor is it requested, so please answer frankly. Your responses will greatly help in assessing the relationship between participation in sports and managerial behavior. Please feel free to make additional comments as you fill out the survey. When you are done, please place the survey in the return envelope provided and mail it promptly.

THANK YOU FOR YOUR TIME AND COOPERATION.

If you have any questions or are interested in the results of this study, please contact the researcher at the following address:

Captain Donald E. Walters
AFIT/LSG
Wright-Patterson AFB, OH 45433
Office Phone: (513) 255-6569

USAF Survey Control Number 86-93 Expires 1 Sep 86

PART I

THIS PART OF THE QUESTIONAIRE ASKS YOU TO ANSWER QUESTIONS PERTAINING TO YOUR OBSERVED MANAGERIAL BEHAVIOR.

Instructions

The item statements presented on the following pages refer to activities which a manager performs in dealing with subordinates, peers, superiors, program team-members and those outside of the organization. Using these statements, please evaluate your on-the-job managerial performance as objectively as you can. The item statements are grouped into six major categories. The six are:

Managing the Organization's Environment and Its Resources
Organizing and Coordinating
Information Handling
Providing for Growth and Development
Motivation and Conflict Handling
Strategic Problem-Solving

For this study, organization refers to that particular portion or part of the total organization/program for which you are primarily responsible. Program team-members refer to those project/program personnel who serve as the functional specialists for the program/project (ie. the engineer, the configuration manager, the test manager, etc.).

The response choices for each behavior item are as follows:

1. The statement unqualifiedly respresents my behavior.
2. The statement strongly represents my behavior.
3. The statement moderately represents my behavior.
4. The statement slightly represents my behavior.
5. No data to evaluate myself on the item statement.
6. The statement slightly does not represent my behavior.
7. The statement moderately does not represent my behavior.
8. The statement strongly does not represent my behavior.
9. The statement unqualifiedly does not represent my behavior.

Please place your rating (1 to 9) in the blank to the left of each statement. For your convenience, the rating scale is repeated at the top of each page of item statements.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

MANAGING THE ORGANIZATION'S ENVIRONMENT AND ITS RESOURCES

In planning and allocation meetings and in on-the-spot decision-making,

____ 1. I fail to give top priority to urgent disturbances and crises in the organization's environment.

____ 2. I develop well-informed plans, polices, and operational procedures to allocate scarce organizational resources.

____ 3. I fail to insure my part of the organization serves the purposes and goals of critical people and groups within the organization's environment.

____ 4. I display up-to-date knowledge of management principles for the appropriate allocation of resources within my organization.

____ 5. I am characterized by my ability to stay ahead of changes within my environment.

____ 6. I run an organization that has time only for activities it wants to engage in, irrespective of changes in the environment.

____ 7. I give up on efforts to reach objectives when faced with setbacks or disturbances from outside my environment.

____ 8. I insure that I am growing and developing technically on the job by reading, attending conferences, etc., to stay ahead of changes in my environment.

____ 9. I am readily available as a resource to those in the organization who need my help.

____ 10. I do not base plans and actions pertaining to the organization's resources on clear, up-to-date, accurate knowledge of the objectives of the parent organization.

____ 11. I can be characterized by the phrase: "Give him additional resources, whatever they are, and count on him to use them properly."

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

ORGANIZING AND COORDINATING

In making decisions involving organizing and in meetings, face-to-face interactions, and telephone conversations where cooperation and coordination are at stake,

____ 12. I organize my operations so that I have just the right amount of information to make my organization an effective performer.

____ 13. I see to it that the amount of influence in the decision-making process is properly distributed throughout the organization to achieve the organization's goals.

____ 14. I do not recognize that one of the most significant resources that a manager organizes is his own time.

____ 15. I organize my operations so that I know where my efforts ought to be allocated, and where they cannot be allocated or should not be allocated.

____ 16. I organize so that deadlines are easily met.

____ 17. I suit the amount of formal rules and regulations in my organization to the tasks to be done and to the abilities and personalities of the people doing them.

____ 18. I am difficult to get along and to coordinate with.

____ 19. I have a variety of leadership styles available to me that I can utilize depending on the demands of the situation that I am in; in other words, I am flexible in my leadership behavior.

20. I build and maintain cooperative relationships:

____ a.) within my organization across groups.

____ b.) with groups outside my organization.

____ 21. I recognize that I cannot do everything myself and so organize to use both my own experience and the experience of those with whom I associate.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

22. I adapt with great difficulty to:

____ a.) my associates

____ b.) changes in the organization's way of getting the job done.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

INFORMATION HANDLING

When dealing with information and communication,

____ 23. I make sure that information entering the organization is processed by formal reports, memos, and word of mouth on a timely basis, so that it is useable, current, and provides rapid feedback.

____ 24. I effectively transmit internal organizational information from one program teammember to another so that they really understand what is required of them.

____ 25. I make sure that the person who has to use the information clearly understands it.

____ 26. I break down overall organizational goals into separate activities and then pass on that information to the people assigned to those activities.

____ 27. I serve as an information filter to my organization, passing on through various channels only the information necessary for the organization to do its job.

28. I communicate effectively within my organization:

____ a.) orally.

____ b.) in writing.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

PROVIDING FOR GROWTH AND DEVELOPMENT

In dealing with associates,

____ 29. I insure, through career counseling and careful observation and recording, that my program team-members are growing and developing in their skills for performing their work.

____ 30. I am unable to effectively select, train, and develop program team-members who are capable of taking on added responsibilities and maintaining the organization in the future.

____ 31. I insure by means of skillful counseling that my program team-members are growing and developing psychologically as individuals.

____ 32. I promote an organization climate or atmosphere where people do not look upon their jobs as merely 8 hours a day of time in exchange for a paycheck, but as an opportunity to grow and develop through their work.

33. I provide for the growth and development of program team-members:

____ a.) by encouraging their attending technical seminars and classes,

____ b.) by providing challenging work to them, or

____ c.) by providing increased responsibility on the job to them as they display a readiness to take it on.

____ 34. I guide program team-members by commendation of good performance.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

MOTIVATING AND CONFLICT HANDLING

In face-to-face interactions with associates,

____ 35. I transmit my own enthusiasm for attaining organizational goals to others.

____ 36. I stimulate the organization's members by convincing them that their jobs are important in reaching organizational goals.

____ 37. I am plagued by recurring conflicts of a similar nature which get in the way of associates' efforts to perform their jobs.

____ 38. I insure that work is within program team-members' expectation of successful completion.

____ 39. I try to overpower others in a conflict situation to persuade them to agree with my point of view.

____ 40. I am unable to create an organizational climate or atmosphere where the organization's members feel a strong identification with the work group.

____ 41. I recognize that conflict in an organization can be healthy and productive; I can also sense when it is prolonged and unproductive, and then cut it off.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

STRATEGIC PROBLEM-SOLVING

Concerning my decision-making activities,

____ 42. I rarely spend time looking at my organization for opportunities to improve performance or for problem situations.

____ 43. I periodically schedule strategy and review sessions involving the design of new ways to improve organizational performance and/or to solve organizational problems.

____ 44. I do not readily solve problems between individuals where interdependencies exist in the tasks they perform.

____ 45. I am able to create a problem-solving climate or atmosphere where the organization's members feel they are effective decision-makers and problem-solvers.

____ 46. I tend to confuse activity with actual problem-solving.

THANK YOU FOR COMPLETING PART I OF THE QUESTIONAIRE

PLEASE GO ON TO PART II

PART II

THIS PART OF THE QUESTIONAIRE ASKS YOU TO ANSWER QUESTIONS PERTAINING TO ANY ORGANIZED SPORTS EXPERIENCE THAT YOU MAY HAVE.

For this study, organized sports are defined as:

> Sports that have been organized for play by some sanctionized governing body. Examples of this would be Little League Baseball, high school varsity football, college varsity basketball, professional hockey and intramural level sports.

47. Using the above definition, have you ever participated in an organized sport?

    1. Yes 2. No

48. Whether you have participated in organized sports or not, are you currently participating in any type of athletics (organized or not), if so, what? _____

    _____

49. Please use this portion of the survey to present any comments that you may have on the statement, "participation in sports is a definite influencing factor on managerial behavior".

If your answer to question number 47 is no, please go on to Part III, you have completed this portion of the survey. If your answer is yes, please answer the remaining questions on those sports (up to four) in which you have the most experience.

SPORT NUMBER 1

50. The organized sport in which I have the most experience is: _____.

51. What level of play was/is this (indicate, by circling, all that apply):

1. Community League (ie. Little League, Pop Warner)
2. Junior High School
3. High School Varsity
4. High School J.V.
5. College Varsity
6. College J.V.
7. College Intramural
8. Semi-Professional
9. Professional
10. SOS Intramural
11. Base Level Intramural
12. Command/AF/DOD Level Intramural
13. Other - Please Specify: _____

52. How long, in years, have you actively participated in this sport on an organized basis?

1. Less than 1
2. 1 - 2
3. 3 - 4
4. 5 - 6
5. 7 - 8
6. 9 - 10
7. Over 10

53. Were you a team captain or equivalent in this sport?

1. Yes
2. No

54. How would you rate your athletic ability in this sport?

1. Well below average
2. Somewhat below average
3. Average
4. Somewhat above average
5. Well above average

55. Through participation in this sport, I've learned how people should work together to be sucessful.

1. Disagree strongly
2. Disagree
3. Disagree slightly
4. Neither agree nor disagree
5. Agree slightly
6. Agree
7. Agree strongly

IF THERE ARE MORE SPORTS IN WHICH YOU HAVE PARTICIPATED, PLEASE CONTINUE ON. IF NOT, PLEASE GO ON TO PART III, YOU HAVE COMPLETED THIS PORTION OF THE SURVEY.

SPORT NUMBER 2

56. The organized sport in which I have the next most experience is: _____.

57. What level of play was/is this (indicate, by circling, all that apply):

1. Community League (ie. Little League, Pop Warner)
2. Junior High School
3. High School Varsity
4. High School J.V.
5. College Varsity
6. College J.V.
7. College Intramural
8. Semi-Professional
9. Professional
10. SOS Intramural
11. Base Level Intramural
12. Command/AF/DOD Level Intramural
13. Other - Please Specify: _____

58. How long, in years, have you actively participated in this sport on an organized basis?

1. Less than 1
2. 1 - 2
3. 3 - 4
4. 5 - 6
5. 7 - 8
6. 9 - 10
7. Over 10

59. Were you a team captain or equivalent in this sport?

1. Yes
2. No

60. How would you rate your athletic ability in this sport?

1. Well below average
2. Somewhat below average
3. Average
4. Somewhat above average
5. Well above average

61. Through participation in this sport, I've learned how people should work together to be sucessful.

1. Disagree strongly
2. Disagree
3. Disagree slightly
4. Neither agree nor disagree
5. Agree slightly
6. Agree
7. Agree strongly

IF THERE ARE MORE SPORTS IN WHICH YOU HAVE PARTICIPATED, PLEASE CONTINUE ON. IF NOT, PLEASE GO ON TO PART III, YOU HAVE COMPLETED THIS PORTION OF THE SURVEY.

SPORT NUMBER 3

62. The organized sport in which I have the next most experience is: _____.

63. What level of play was/is this (indicate, by circling, all that apply):

1. Community League (ie. Little League, Pop Warner)
2. Junior High School
3. High School Varsity
4. High School J.V.
5. College Varsity
6. College J.V.
7. College Intramural
8. Semi-Professional
9. Professional
10. SOS Intramural
11. Base Level Intramural
12. Command/AF/DOD Level Intramural
13. Other - Please Specify: _____

64. How long, in years, have you actively participated in this sport on an organized basis?

1. Less than 1
2. 1 - 2
3. 3 - 4
4. 5 - 6
5. 7 - 8
6. 9 - 10
7. Over 10

65. Were you a team captain or equivalent in this sport?

1. Yes
2. No

66. How would you rate your athletic ability in this sport?

1. Well below average
2. Somewhat below average
3. Average
4. Somewhat above average
5. Well above average

67. Through participation in this sport, I've learned how people should work together to be sucessful.

1. Disagree strongly
2. Disagree
3. Disagree slightly
4. Neither agree nor disagree
5. Agree slightly
6. Agree
7. Agree strongly

IF THERE ARE MORE SPORTS IN WHICH YOU HAVE PARTICIPATED, PLEASE CONTINUE ON. IF NOT, PLEASE GO ON TO PART III, YOU HAVE COMPLETED THIS PORTION OF THE SURVEY.

SPORT NUMBER 4

68. The organized sport in which I have the next most experience is: _____.

69. What level of play was/is this (indicate, by circling, all that apply):

1. Community League (ie. Little League, Pop Warner)
2. Junior High School
3. High School Varsity
4. High School J.V.
5. College Varsity
6. College J.V.
7. College Intramural
8. Semi-Professional
9. Professional
10. SOS Intramural
11. Base Level Intramural
12. Command/AF/DOD Level Intramural
13. Other - Please Specify: _____

70. How long, in years, have you actively participated in this sport on an organized basis?

1. Less than 1
2. 1 - 2
3. 3 - 4
4. 5 - 6
5. 7 - 8
6. 9 - 10
7. Over 10

71. Were you a team captain or equivalent in this sport?

1. Yes
2. No

72. How would you rate your athletic ability in this sport?

1. Well below average
2. Somewhat below average
3. Average
4. Somewhat above average
5. Well above average

73. Through participation in this sport, I've learned how people should work together to be sucessful.

1. Disagree strongly
2. Disagree
3. Disagree slightly
4. Neither agree nor disagree
5. Agree slightly
6. Agree
7. Agree strongly

THANK YOU FOR COMPLETING PART II OF THE QUESTIONNAIRE

PLEASE GO ON TO PART III

PART III

THIS PART OF THE QUESTIONAIRE ASKS YOU TO ANSWER QUESTIONS PERTAINING TO YOUR PROFESSIONAL BACKGROUND AND YOUR CURRENT JOB.

74. Rank:

1. Second Lieutenant
2. First Lieutenant
3. Captain
4. Major
5. Lt Colonel
6. Colonel
7. Other - Please specify: _____

75. Sex:

1. Female
2. Male

76. Present age in years:

1. 20 - 24
2. 25 - 29
3. 30 - 34
4. 35 - 39
5. 40 - 44
6. 45 or over

77. Source of commissioning:

1. AFROTC
2. OTS
3. USAFA
4. Other - Please specify: _____

78. Highest level of education:

1. Undergraduate degree (BS, BA, or equivalent)
2. Undergraduate degree plus some graduate studies
3. Master's degree
4. Master's degree plus additional graduate studies
5. Doctorate (PHD or equivalent)
6. Other - Please specify: _____

79. Current AFSC:

1. 2711
2. 2716
3. 2721
4. 2724
5. Other - Please specify: _____

80. Please indicate your current job title (it need not be program specific): _____

81. Please indicate the area in which your current job is most associated.

1. Program Management
2. Configuration/Data Management
3. Safety
4. Test/Evaluation
5. Engineering
6. Manufacturing/Production
7. Logistics
8. Program Control
9. Other - Please specify: _____

82. How long, in years, have you been in this career field?

1. Less than 1
2. 1 - 2
3. 3 - 4
4. 5 - 6
5. 7 - 8
6. 9 - 10
7. Over 10

83. If you are a program/project manager, do you have other program/project managers working for you?

1. Yes
2. No

84. If your answer to question number 83 is yes or you are other than a program/project manager, how many people work directly under you?

1. 1 - 4
2. 5 - 9
3. 10 - 14
4. 15 - 19
5. 20 or more

THIS IS IT, PLEASE INSURE YOUR SURVEY IS MARKED PROPERLY AND MAIL ALL MATERIALS PROMPLY USING THE ENVELOPE PROVIDED
THANK YOU FOR YOUR HELP!!

Appendix B: Supplementary Survey Instrument

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT-PATTERSON AIR FORCE BASE OH 45433-6583

30 Jun 1986

REPLY TO ATTN OF: LSG (Capt Walters, 56569)

SUBJECT: Sports Participation and Managerial Behavior Supplementary Survey Package

TO:

1. This survey will be used to determine if participation in sports influences on-the-job behavior exhibited by program managers. Two types of surveys are being used in this research effort; one for you to complete on the program manager identified on the front of this letter and a similiar one to be completed by the manager himself/herself. The one you have received contains questions pertaining to your perception of that manager's on-the-job behavior. You are in a position to make an important contribution to this AFIT research project. The data collected will be used to evaluate the claim that participation in sports enhances the development of leadership and interpersonal skills.

2. Please take the time to complete the attached questionnaire and return it in the enclosed envelope within 7 days of receipt. Your individual response will be combined with other responses and will not be attributed to you personally.

3. Your participation is completely voluntary, but we would certainly appreciate your help.

4. The faculty advisor for this project is Capt T. Triscari (53355).

R Taliaferro

RICHARD T. TALIAFERRO
Head, Dept of Sys Acq Mgt
School of Systems and Logistics

2 Atch
1. Questionnaire
2. Return Envelope

USAF Survey Control Number 86-93

Expires 1 Sep 86

THE SPORTS PARTICICATION AND

MANAGERIAL BEHAVIOR SUPPLEMENTARY SURVEY

Purpose

Research has shown that there are several factors which determine on-the-job behavior exhibited by managers. These factors include such things as education, experience, age, sex, personality, individual values, and the specific situation that the manager is faced with. The purpose of this survey is to obtain the data needed to determine if participation in sports is one of these influencing factors on managerial behavior -- more specifically, on the managerial behavior of Air Force Acquisition Project Officers who are program/project managers.

General Instructions

This survey is divided into two parts and will take approximately 30 minutes to complete. Part I asks you to answer questions pertaining to managerial behavior that you have observed in the manager that you are evaluating. Part II asks you to answer questions pertaining to your relationship with the manager that you are evaluating.

Nonattribution applies to this survey. The number assigned to this particular copy of the survey is only to be used to collate your responses with those of the program manager that you are evaluating. Your name, therefore, is not associated with this copy of the survey nor is it requested, so please answer frankly. Your responses will greatly help in assessing the relationship between participation in sports and managerial behavior. Please feel free to make additional comments as you fill out the survey. When you are done, please place the survey in the return envelope provided and mail it promptly.

THANK YOU FOR YOUR TIME AND COOPERATION.

If you have any questions or are interested in the results of this study, please contact the researcher at the following address:

Captain Donald E. Walters
AFIT/LSG
Wright-Patterson AFB, OH 45433
Office Phone: (513) 255-6589

USAF Survey Control Number 86-93 Expires 1 Sep 86

PART I

THIS PART OF THE QUESTIONAIRE ASKS YOU TO ANSWER QUESTIONS PERTAINING TO MANAGERIAL BEHAVIOR THAT YOU HAVE OBSERVED IN THE MANAGER THAT YOU ARE EVALUATING.

Instructions

The item statements presented on the following pages refer to activities which a manager performs in dealing with subordinates, peers, superiors, program team-members and those outside of the organization. Using these statements, please think about the on-the-job behavior of the manager you are evaluating and evaluate him/her as objectively as you can. The item statements are grouped into six major categories. The six are:

Managing the Organization's Environment and Its Resources
Organizing and Coordinating
Information Handling
Providing for Growth and Development
Motivation and Conflict Handling
Strategic Problem-Solving

For this study, organization refers to that particular portion or part of the total organization/program for which the manager being evaluated is primarily responsible. Program team-members refer to those project/program personnel who serve as the functional specialists for the program/project (ie. the engineer, the configuration manager, the test manager, etc.).

The response choices for each behavior item are as follows:

1. The statement unqualifiedly respresents the manager's behavior.
2. The statement strongly represents the manager's behavior.
3. The statement moderately represents the manager's behavior.
4. The statement slightly represents the manager's behavior.
5. No data to evaluate the manager on the item statement.
6. The statement slightly does not represent the manager's behavior.
7. The statement moderately does not represent the manager's behavior.
8. The statement strongly does not represent the manager's behavior.
9. The statement unqualifiedly does not represent the manager's behavior.

Please place your rating (1 to 9) in the blank to the left of each statement. For your convenience, the rating scale is repeated at the top of each page of item statements.

The use of the words "he" and "his" throughout this portion of the survey are for simplicity only; the words "she" and "her" should be substituted when applicable.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

MANAGING THE ORGANIZATION'S ENVIRONMENT AND ITS RESOURCES

In planning and allocation meetings and in on-the-spot decision-making where I have observed this manager, he:

____ 1. fails to give top priority to urgent disturbances and crises in the organization's environment.

____ 2. develops well-informed plans, polices, and operational procedures to allocate scarce organizational resources.

____ 3. fails to insure that his part of the organization serves the purposes and goals of critical people and groups within the organization's environment.

____ 4. displays up-to-date knowledge of management principles for the appropriate allocation of resources within his organization.

____ 5. is characterized by his ability to stay ahead of changes within his environment.

____ 6. runs an organization that has time only for activities it wants to engage in, irrespective of changes in the environment.

____ 7. gives up on efforts to reach objectives when faced with setbacks or disturbances from outside his environment.

____ 8. insures that he is growing and developing technically on the job by reading, attending conferences, etc., to stay ahead of changes in his environment.

____ 9. is readily available as a resource to those in the organization who need his help.

____ 10. does not base plans and actions pertaining to the organization's resources on clear, up-to-date, accurate knowledge of the objectives of the parent organization.

____ 11. can be characterized by the phrase: "Give him additional resources, whatever they are, and count on him to use them properly."

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

ORGANIZING AND COORDINATING

In making decisions involving organizing and in meetings, face-to-face interactions, and telephone conversations where cooperation and coordination are at stake, I have observed that this manager:

____ 12. organizes his operations so that he has just the right amount of information to make his organization an effective performer.

____ 13. sees to it that the amount of influence in the decision-making process is properly distributed throughout the organization to achieve the organization's goals.

____ 14. does not recognize that one of the most significant resources that a manager organizes is his own time.

____ 15. organizes his operations so that he knows where his efforts ought to be allocated, and where they cannot be allocated or should not be allocated.

____ 16. organizes so that deadlines are easily met.

____ 17. suits the amount of formal rules and regulations in his organization to the tasks to be done and to the abilities and personalities of the people doing them.

____ 18. is difficult to get along with and to coordinate with.

____ 19. has a variety of leadership styles available to him that he can utilize depending on the demands of the situation that he is in; in other words, he is flexible in his leadership behavior.

20. builds and maintains cooperative relationships:

____ a.) within his organization across groups.

____ b.) with groups outside his organization.

____ 21. recognizes that he cannot do everything himself and so organizes to use both his own experience and the experience of those with whom he associate.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

22. adapts with great difficulty to:

____ a.) his associates

____ b.) changes in the organization's way of getting the job done.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

INFORMATION HANDLING

In my observation of this manager when he is dealing with information and communication, he:

____ 23. makes sure that information entering the organization is processed by formal reports, memos, and word of mouth on a timely basis, so that it is useable, current, and provides rapid feedback.

____ 24. effectively transmits internal organizational information from one program teammember to another so that they really understand what is required of them.

____ 25. makes sure that the person who has to use the information clearly understands it.

____ 26. breaks down overall organizational goals into separate activities and then passes on that information to the people assigned to those activities.

____ 27. serves as an information filter to his organization, passing on through various channels only the information necessary for the organization to do its job.

28. communicates effectively within his organization:

____ a.) orally.

____ b.) in writing.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

PROVIDING FOR GROWTH AND DEVELOPMENT

In dealing with associates where I have observed this manager, he:

____ 29. insures, through career counseling and careful observation and recording, that his program team-members are growing and developing in their skills for performing their work.

____ 30. is unable to effectively select, train, and develop program team-members who are capable of taking on added responsibilities and maintaining the organization in the future.

____ 31. insures by means of skillful counseling that his program team-members are growing and developing psychologically as individuals.

____ 32. promotes an organization climate or atmosphere where people do not look upon their jobs as merely 8 hours a day of time in exchange for a paycheck, but as an opportunity to grow and develop through their work.

33. provides for the growth and development of program team-members:

____ a.) by encouraging their attending technical seminars and classes,

____ b.) by providing challenging work to them, or

____ c.) by providing increased responsibility on the job to them as they display a readiness to take it on.

____ 34. guides program team-members by commendation of good performance.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

MOTIVATING AND CONFLICT HANDLING

In face-to-face interactions with associates that I have observed, this manager:

____ 35. transmits his own enthusiasm for attaining organizational goals to others.

____ 36. stimulates the organization's members by convincing them that their jobs are important in reaching organizational goals.

____ 37. is plagued by recurring conflicts of a similar nature which get in the way of associates' efforts to perform their jobs.

____ 38. insures that work is within program team-members' expectation of successful completion.

____ 39. trys to overpower others in a conflict situation to persuade them to agree with his point of view.

____ 40. is unable to create an organizational climate or atmosphere where the organization's members feel a strong identification with the work group.

____ 41. recognizes that conflict in an organization can be healthy and productive; can also sense when it is prolonged and unproductive, and then cuts it off.

1. Unqualifiedly represents
2. Strongly represents
3. Moderately represents
4. Slightly represents
5. No data
6. Slightly does not represent
7. Moderately does not represent
8. Strongly does not represent
9. Unqualifiedly does not represent

STRATEGIC PROBLEM-SOLVING

From my observations of this manager's decision-making activities, I have found that he:

____ 42. rarely spends time looking at his organization for opportunities to improve performance or for problem situations.

____ 43. periodically schedules strategy and review sessions involving the design of new ways to improve organizational performance or to solve organizational problems.

____ 44. does not readily solve problems between individuals where interdependencies exist in the tasks they perform.

____ 45. is able to create a problem-solving climate or atmosphere where the organization's members feel they are effective decision-makers and problem-solvers.

____ 46. tends to confuse activity with actual problem-solving.

THANK YOU FOR COMPLETING PART I OF THE QUESTIONAIRE

PLEASE GO ON TO PART II

PART II

THIS PART OF THE QUESTIONAIRE ASKS YOU TO ANSWER QUESTIONS PERTAINING TO YOUR RELATIONSHIP WITH THE MANAGER THAT YOU ARE EVALUATING.

47. What is your professional relationship with the manager being evaluated?

1. The manager's supervisor
2. The manager's subordinate
3. The manager's program team-member
4. Other - Please specify: _____

Note: For this study, program team-members are those project/program personnel who serve as the functional specialists for the program/project (ie. the engineer, the configuration manager, the test manager, etc.)

48. How long, in years, have you been in this professional relationship with the manager being evaluated?

1. Less than 1
2. 1 - 2
3. 3 - 4
4. 5 - 6
5. 7 - 8
6. 9 - 10
7. Over 10

49. What is your sex:

1. Female
2. Male

50. Please indicate the area that your current job is most associated with.

1. Program Management
2. Configuration/Data Management
3. Safety
4. Test/Evaluation
5. Engineering
6. Manufacturing/Production
7. Logistics
8. Program Control
9. Other - Please specify: _____

51. Please indicate your current job title (it need not be program specific): _____

52. In a sports context, the manager being evaluated, while on the job, is more of a:

1. Team player
2. Prima donna (star)
3. Other - Please specify: _____

THIS IS IT, PLEASE INSURE YOUR SURVEY IS MARKED PROPERLY AND MAIL ALL MATERIALS PROMPLY USING THE ENVELOPE PROVIDED

THANK YOU FOR YOUR HELP!!

Appendix C: Comments From Survey Respondents

Each of the 34 program manager who made up the sample for this study were asked to respond to the statement, "participation in sports is a definite influencing factor on managerial behavior". Of the 21 that responded, a listing of the comments that they provided is as follows.

Positive Comments

1. Participation in sports provides the opportunity to both lead and perform. It places emphasis on performance with definitive consequences (win or lose). The feedback on management styles is immediate and often transcends the confines of social interaction that restrict direct response on the job.

2. Sports participation is part of a maturing process for interacting with other people and being a team member. I is also part of a socialization process. These influences will definately leave their mark on each individual's personality and managerial behavior.

3. I strongly agree because athletics require decision making, communicating skills, [and] coordinating activity. The magnitude or context of applying these skills vary according to the specific sport, but they do apply.

4. Participating on a sport team is very similar to participating on a project team. The team must be organized and geared toward achieving a common goal. They both must be motivated and evaluated in a similar manner. Sports definitely allow a manager to hone his skills.

5. This statement infers team work in my view. Everyone concerned has a part to play to get the job done.

6. Team sports should influence a person to have more of a group approach to problem solving and managerial approaches.

7. In my opinion, I feel this statement should be modified to include the words "physical contact" between "in" and "sports". After playing football and golf in intramurals, I noticed my "managerial" behavior in the areas of cohesiveness or discipline coming out stronger after football than golf.

8. The lessons learned from organized sports (e.g. teamwork, ball hogs, team management) are the same principals

at work in the office. So yes, sports certainly adds to the experience data base and therefore influences management behavior.

9. It is another vehicle to becoming a better manager. You are learning to deal with people sharing common goals -- thru understanding a changing strategy that produces both victory and defeat.

10. A team player in sports will usually exhibit the same behavior in a work environment.

11. Participation in sports can influence managerial behavior in two aspects: self-discipline and discipline of a group. From my personal experience, individual sports (non-team sports) require self-discipline and motivation to push oneself toward a goal. This kind of behavior can carry directly over to any kind of job. On the other hand, team sports foster discipline of a group, a team effort, and participation by all members. This is behavior needed at the management level to organize and direct groups of people and bring organizations together working for a common goal.

12. I agree. I don't know of any scientific proof of this statement but for me, sports have influenced and improved my managerial behavior. Obviously, in a team sport you need to work together or you loose, the same is true in the office. Changes, being flexible, adaptable, all are characteristics in both sports situations and the office. The experiences in sports have helped me to be more flexible and adaptable to changes, problems, etc. It has also aided with my, "get the job done", and "can do" attitude.

13. That depends on the individual. For many people (like me), sports are a necessity to overall well being. I feel that sports are a healthy outlet for aggressions and tension. There are other equally viable outlets. I believe that organized team sports contribute greatly to a person's understanding of the interdependent nature of any team effort -- if the person plays on the right level (ie. is not much better or much worse than his teammates or the competition).

For those who are not athletically inclined, there are other group activities which teach the same principles, however, I have never participated in any that drive home the idea of teamwork as strongly as the more cooperative team sports. Sports requiring individual effort, eg. combative sports, have other values. I also believe that a manager who is not and does not appear relatively physically fit will face an undercurrent of disrespect from his subordinates on that basis.

14. The only way this statement is true is in the develop-

ment of teamwork, team cooperation, [and] team spirit. There are many other activities that develop teamwork and other important ingredients such as leadership, one good example is scouting.

15. Physical activity definitely improves my mental outlook on things.

16. Perhaps team membership/leadership will carry over to the program management world. I would not go so far as to consider it a "definite ... factor".

17. Sports helps by learning teamwork, determining ability to push one's capabilities to higher limits, developing physical stamina to withstand high activity level for a sustained period, performing under pressure, teaches one to lose graciously while not liking it.

18. [It] allows [for] social interaction with other colleagues in the office and greater communication opportunities about a myriad of subjects.

19. As a stress reliever and to promote overall health, participation in sports enables the manager to handle conflicts effectively, work efficiently, relax, and do a good job.

Negative Comments

1. I disagree. Managerial behavior is a projection of your behavior in your personal behavior. Participation in sports won't serve to modify this behavior to any large extent. It will provide you with greater energy and a greater sense of well being (if you achieve your desired goals), but this I feel, may also relate to your current personality.

2. I disagree (as you will be able to tell from my responses to the following questions). Although a popular parallel, I think it is given too much credence. I think itw would be much more accurate to say sports influence "followership" behavior. In most sports the players are given abstract goals (block that man, hit to left field, etc) and trusted to fulfill them to the best of their ability.

Management provided by team leader is quite different from the skills required to motivate people in an office. Goals must be more specific and motivation of the "team" is more subtle, mixed with the disparity of rank between boss and worker. The best leader on the field could well be a flop on the job and visa versa.

Appendix D: Tables of Test for Homogeneity of Variances

TABLE 18

TEST FOR HOMOGENEITY OF VARIANCES -- FIRST T-TEST FOR SPORTS PARTICIPATION

TYPE OF TEST	F-VALUE	P-VALUE
ROLE 1		
COCHRANS C	-----	0.022
MAX VAR/MIN VAR	3.293	-----
T-TEST SUBPROGRAM	3.290	0.018
ROLE 2		
COCHRANS C	-----	0.144
MAX VAR/MIN VAR	2.118	-----
T-TEST SUBPROGRAM	2.120	0.134
ROLE 3		
COCHRANS C	-----	0.023
MAX VAR/MIN VAR	3.278	-----
T-TEST SUBPROGRAM	3.280	0.019
ROLE 4		
COCHRANS C	-----	0.709
MAX VAR/MIN VAR	1.209	-----
T-TEST SUBPROGRAM	1.210	0.679
ROLE 5		
COCHRANS C	-----	0.051
MAX VAR/MIN VAR	2.754	-----
T-TEST SUBPROGRAM	2.750	0.044
ROLE 6		
COCHRANS C	-----	0.712
MAX VAR/MIN VAR	1.207	-----
T-TEST SUBPROGRAM	1.210	0.682

TABLE 19

TEST FOR HOMOGENEITY OF VARIANCES -- SECOND
T-TEST FOR SPORTS PARTICIPATION

TYPE OF TEST	F-VALUE	P-VALUE
ROLE 1		
COCHRANS C	-----	0.033
MAX VAR/MIN VAR	3.032	-----
T-TEST SUBPROGRAM	3.030	0.033
ROLE 2		
COCHRANS C	-----	0.337
MAX VAR/MIN VAR	1.632	-----
T-TEST SUBPROGRAM	1.630	0.337
ROLE 3		
COCHRANS C	-----	0.005
MAX VAR/MIN VAR	4.482	-----
T-TEST SUBPROGRAM	4.480	0.005
ROLE 4		
COCHRANS C	-----	0.709
MAX VAR/MIN VAR	1.209	-----
T-TEST SUBPROGRAM	1.210	0.709
ROLE 5		
COCHRANS C	-----	0.085
MAX VAR/MIN VAR	2.433	-----
T-TEST SUBPROGRAM	2.430	0.085
ROLE 6		
COCHRANS C	-----	0.368
MAX VAR/MIN VAR	1.582	-----
T-TEST SUBPROGRAM	1.580	0.368

TABLE 20

TEST FOR HOMOGENEITY OF VARIANCES -- T-TEST
FOR TEAM SPORTS VS INDIVIDUAL SPORTS

TYPE OF TEST	F-VALUE	P-VALUE
ROLE 1		
COCHRANS C	-----	0.034
MAX VAR/MIN VAR	3.013	-----
T-TEST SUBPROGRAM	3.010	0.032
ROLE 2		
COCHRANS C	-----	0.081
MAX VAR/MIN VAR	2.464	-----
T-TEST SUBPROGRAM	2.460	0.078
ROLE 3		
COCHRANS C	-----	0.525
MAX VAR/MIN VAR	1.382	-----
T-TEST SUBPROGRAM	1.380	0.505
ROLE 4		
COCHRANS C	-----	0.501
MAX VAR/MIN VAR	1.409	-----
T-TEST SUBPROGRAM	1.410	0.611
ROLE 5		
COCHRANS C	-----	0.123
MAX VAR/MIN VAR	2.209	-----
T-TEST SUBPROGRAM	2.210	0.121
ROLE 6		
COCHRANS C	-----	0.957
MAX VAR/MIN VAR	1.028	-----
T-TEST SUBPROGRAM	1.030	0.896

TABLE 21

TEST FOR HOMOGENEITY OF VARIANCES -- T-TEST
FOR DIFFERENCES WITHIN TEAM SPORTS

TYPE OF TEST	F-VALUE	P-VALUE
ROLE 1		
COCHRANS C	-----	0.760
MAX VAR/MIN VAR	1.208	-----
T-TEST SUBPROGRAM	1.210	0.746
ROLE 2		
COCHRANS C	-----	0.801
MAX VAR/MIN VAR	1.168	-----
T-TEST SUBPROGRAM	1.170	0.788
ROLE 3		
COCHRANS C	-----	0.020
MAX VAR/MIN VAR	4.434	-----
T-TEST SUBPROGRAM	4.430	0.018
ROLE 4		
COCHRANS C	-----	0.571
MAX VAR/MIN VAR	1.419	-----
T-TEST SUBPROGRAM	1.420	0.558
ROLE 5		
COCHRANS C	-----	0.539
MAX VAR/MIN VAR	1.463	-----
T-TEST SUBPROGRAM	1.460	0.526
ROLE 6		
COCHRANS C	-----	0.503
MAX VAR/MIN VAR	1.514	-----
T-TEST SUBPROGRAM	1.510	0.490

TABLE 22

TEST FOR HOMOGENEITY OF VARIANCES -- FIRST T-TEST FOR ATHLETIC PROWESS

TYPE OF TEST	F-VALUE	P-VALUE
ROLE 1		
COCHRANS C	-----	0.040
MAX VAR/MIN VAR	2.903	-----
T-TEST SUBPROGRAM	2.900	0.037
ROLE 2		
COCHRANS C	-----	0.157
MAX VAR/MIN VAR	2.066	-----
T-TEST SUBPROGRAM	2.070	0.152
ROLE 3		
COCHRANS C	-----	0.016
MAX VAR/MIN VAR	3.538	-----
T-TEST SUBPROGRAM	3.540	0.014
ROLE 4		
COCHRANS C	-----	0.933
MAX VAR/MIN VAR	1.043	-----
T-TEST SUBPROGRAM	1.040	0.942
ROLE 5		
COCHRANS C	-----	0.188
MAX VAR/MIN VAR	1.963	-----
T-TEST SUBPROGRAM	1.960	0.183
ROLE 6		
COCHRANS C	-----	0.839
MAX VAR/MIN VAR	1.109	-----
T-TEST SUBPROGRAM	1.110	0.831

TABLE 23

TEST FOR HOMOGENEITY OF VARIANCES -- SECOND
T-TEST FOR ATHLETIC PROWESS

TYPE OF TEST	F-VALUE	P-VALUE
ROLE 1		
COCHRANS C	-----	0.047
MAX VAR/MIN VAR	2.800	-----
T-TEST SUBPROGRAM	2.800	0.051
ROLE 2		
COCHRANS C	-----	0.148
MAX VAR/MIN VAR	2.101	-----
T-TEST SUBPROGRAM	2.100	0.155
ROLE 3		
COCHRANS C	-----	0.014
MAX VAR/MIN VAR	3.614	-----
T-TEST SUBPROGRAM	3.610	0.016
ROLE 4		
COCHRANS C	-----	0.912
MAX VAR/MIN VAR	1.058	-----
T-TEST SUBPROGRAM	1.060	0.920
ROLE 5		
COCHRANS C	-----	0.246
MAX VAR/MIN VAR	1.809	-----
T-TEST SUBPROGRAM	1.810	0.255
ROLE 6		
COCHRANS C	-----	0.767
MAX VAR/MIN VAR	1.162	-----
T-TEST SUBPROGRAM	1.160	0.776

TABLE 24

TEST FOR HOMOGENEITY OF VARIANCES -- THIRD
T-TEST FOR ATHLETIC PROWESS

TYPE OF TEST	F-VALUE	P-VALUE
ROLE 1		
COCHRANS C	-----	0.121
MAX VAR/MIN VAR	2.219	-----
T-TEST SUBPROGRAM	2.220	0.125
ROLE 2		
COCHRANS C	-----	0.185
MAX VAR/MIN VAR	1.973	-----
T-TEST SUBPROGRAM	1.970	0.189
ROLE 3		
COCHRANS C	-----	0.531
MAX VAR/MIN VAR	1.376	-----
T-TEST SUBPROGRAM	1.380	0.667
ROLE 4		
COCHRANS C	-----	0.925
MAX VAR/MIN VAR	1.049	-----
T-TEST SUBPROGRAM	1.050	0.858
ROLE 5		
COCHRANS C	-----	0.174
MAX VAR/MIN VAR	2.009	-----
T-TEST SUBPROGRAM	2.010	0.178

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Vita

Captain Donald E. Walters was born on 25 October 1957 in Sherman, Texas. He graduated from Sherman High School, Sherman, Texas in 1976 and continued his studies at the United States Air Force Academy, Colorado. Captain Walters graduated from the Academy in 1980 with a Bachelor of Science degree in Operations Research. Upon receiving his commission, his initial operational assignment was at Wright-Patterson AFB as a configuration manager in the Strategic Systems Program Office, Aeronautical Systems Division (ASD). In December 1981, with the restart of the B-1B program, Captain Walters was reassigned to the B-1B Systems Program Office, ASD as a B-1B configuration manager, until becoming the B-1B Defensive System Support Equipment Program Manager in June 1983. In May 1985 Captain Walters entered the Graduate of Systems Management program, School of Systems and Logistics, Air Force Institute of Technology. He was awarded a Master of Science Degree in Systems Management in September 1986. Captain Walters has a follow-on assignment to the Pentagon, Washington D.C.

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This research examined the popular, but empirically untested, notion that paticipation in organized sports has a positive relationship to management development. Exploration of this hypothesised relationship was performed within the context of U.S. Air Force program/project managers assigned to Aeronautical Systems Division (ASD), Wright-Patterson AFB. The methodology compared managerial behavior: (1) between program/project managers who have participated in organized sports (both team and individual) and between those who have participated in little or no sports at all; and (2) between those who have participated in different types of team sports. Specifically, this was accomplished by determining mean scores in each of six different managerial roles for 34 ASD program managers. These mean scores represent each manager's overall managerial performance as reported by the manager and up to three additional evaluators professionally related to him/her. Statistically significant differences were found, in mean scores, between those managers who had participated extensively in sports and those who had participated less; between those who had concentrated more on team sports and those who concentrated more on individual sports; between those participating in different types of team sports; and between those identified as having a high degree of athletic prowess and those identified as having lower degrees of prowess. The total number of years of participation and athletic prowess were also found, in separate regression analyses, to be linearly related to the mean scores, for all six roles. The results of this investigation clearly indicated a positive relationship existing between participation in sports and managerial behavior -- within the context of ASD program managers. The strong consistency of these empirical findings suggest that this relationship may be causal.